

Principles **OF** **Agricultural Economics**

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DEDICATED RESPECTFULLY
to the memory of
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PREFACE

At a time, when the public gaze is fixed on the problems of Agriculture, and the Planners are trying hard to reshape the agricultural economy of India, a consolidated statement of the *Principles of Agricultural Economics* may not be out of place. Much confusion of thought could be avoided if a correct application of the principles to the problems were made. Policy making, carried out in the light of the accepted theory, would steer clear of the deflections and degenerations from which it suffers today. It is sound theory alone, that could guide the Planners and the Administrators, let apart the Peasants and Economists. To ignore the fundamental principles is suicidal to the implementation of the projected policies. Agricultural Policy, if it is to be sure-footed, must find a basis in the accepted principles, to which all agrarian projects must be geared.

An inexcusable gap has noticeably existed in the Indian Economic Literature about a book on the theoretical aspects of Agricultural Economics, probably because the Indian Economists have been preoccupied with problems more difficult and desperate, or probably because the agriculturists did not present a set of problems, which could only be tackled under theoretical guidance. The fact is, that the subject has remained neglected, for the master minds have been able to attack the problem, without formally invoking the principle underlying them, but for the layman and the student this abbreviated process of "mental gymnastics" was quite a jigsaw puzzle.

Pertinent, it is, therefore, to expect that this elementary analysis of the rudimentary *Principles of Agricultural Economics*, would provide some background to the student and the layman; though the Economist and the Expert may find in this approach nothing original. In fact, this manuscript shaped itself out of the efforts of the author (himself a humble student) to convey to his students in an intelligible manner, and in a consolidated fashion the basic elements of the subject; he owes this dissertation to the constructive criticism of his students and colleagues.

No originality is claimed for the subject matter, which is as old as Man. Most of the standard works on the subject emanating, as they do, from the Western experts, suffer from an excessive interspersing of topical and local references, through which the average Indian student, unacquainted with those conditions, finds it difficult to wade. An effort has been made, even at the cost of repetition, to resist the temptation of making local allusions. The author is conscious of the

limitations of the treatment presented here, and would welcome any criticism which would not only improve the tone of the book, but also educate him. He craves the indulgence of his seniors for intrusion into an expert field, and hopes they would overlook all lapses in this analysis and its presentation.

In the end, the author acknowledges his deepest debt of gratitude to the standard works on the subject (which have been consulted), to his teachers (at whose feet he learnt the subject), to his learned colleagues, devoted friends (who encouraged him at every step), and his publishers who have been good enough to give the book its final shape and bring it out in time.

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CHAPTER I

INTRODUCTION

What is Agriculture?—Place of Agriculture amongst Man's Activities : Peculiarities of Agriculture : Its Natural and Physical Limitations : Many-sidedness of Agriculture : Agriculture, Industry and Commerce : Economic Divergence between Primary and Secondary Industries. Agriculture as a Science and an Art—Application of Science : Art of Agriculture : Agricultural and Business Activities. Conclusions and Summary.

Agriculture, the oldest and the most basic of all human professions, is in its widest aspects, assumed to include all forms of soil production, from forestry to glass-house culture, from fishery to artificial insemination, and from breeding to horticulture. Even in this industrial age agriculture is easily the world's biggest calling. It is the most important 'industry'. A study of agriculture comprises not only the study of crops and farming but also that of its soil and of fertility and applied biology, breeding and feeding of farm animals as also drainage of the marshes. Thus it draws upon a knowledge of Applied Biology, Engineering (including Mechanics) and even some elements of Geology. Nowadays an efficient farmer must also be conversant with elements of Meteorology and Bacteriology. Thus agriculture is an over-all branch of knowledge, probably the widest. A farmer, in order to earn a decent living must also know the elements of business. A good farmer's scientific training would, in short, include a thorough knowledge of the physical and biological principles, underlying agriculture, laws of Agricultural Economics and a thorough system of farm book-keeping and accounting, too.

WHAT IS AGRICULTURE

Place of Agriculture. Manifold, as man's activities are, agriculture occupies the most important place amongst them. We get our food from agriculture. Corn is grown on the farms, Horticulture is a similar pursuit, cattle rearing and dairy farming are subsidiary industries, while fishery is an allied occupation. The farmer is thus the food-giver. Again, it is on the raw material grown in our fields and farms that most of the manufacturing industries are based. Our clothing needs are met from agriculture, whether it be textiles (from cotton and other fibres) or it be woollen clothes (from sheep farming) or the silken varieties (from sericulture). Man's shelter is provided for mainly by forestry, which supply timber for building and furnishing purposes. The fuel needs of an overwhelming majority of mankind are still met from agricultural operations pertaining to afforestation and certain more

backward communities from cattle rearing. Humanity could probably not live without agriculture. Paradoxically enough, agriculture still remains the most important industry in this Industrial Age.

Peculiarities of Agriculture Agricultural operations are quite distinct. Nature plays a dominant role in agricultural pursuits. Here man's association with Nature is most intimate and manysided. Weather, climate, soil structure, sunshine and other such factors beyond the reach of man, play the most vital role in the farming business. This is not to minimise the scientific achievements in the field of agriculture, which has recently been transformed into a very technical science. But the emphasis remains on the "naturalness" of farming. An outdoor occupation, as it persistently continues to be, in spite of all scientific achievements, it must inherently always be at the mercy of Mother Nature. Still another distinctive feature is its seasonal aspect. Growing crops is a seasonal operation, born out of the season and depending upon its cycle. Any variation or disturbance in their repetitiveness easily dislocates this farming routine. Also geophysical disturbances have their repercussions on croppage. Soil composition and mechanics definitely reflect on crop production. Even the movements of sunspots may bring about changes in productivity by influencing the amount of sunlight available. Agriculture is also dependent upon the subsoil bacteriological variants. Thus it is that agriculture remains an industry with the peculiar characteristic of being out of man's active control, although agricultural operations are being increasingly brought within his sphere of influence.

Natural and Physical Limitations In this context may also be mentioned the natural and physical limitations of agriculture. As stated above, a large number of physical factors circumscribe this venture, e.g. soil, latitude, altitude, accessibility, configuration, evaporation and temperature. Because of some of these factors, vast areas have been rendered useless for cultivation. To take an example, altitude admittedly affects the composition of the crops. Similarly latitude, too, has a bearing on the variety of agricultural products. The output in the Equatorial region is not, what it is in the Tropical or the Tundra regions. Temperature, too, exercises an immeasurable influence on crop production. Only such insignificant factors as changes in humidity bring about parallel changes in cropping. Again, the incidence of configuration on the composition of crops is immense. Similarly, precipitation and evaporation concern themselves with the retention of moisture in the soil which, in turn, plays not an insignificant part in the farming operations. Due regard has also to be paid to Nature's living organisms which jeopardise the practice of agriculture. Locust swarms, rinderpest,

and contagious abortions among cattle, the warble and the tsetse fly and numerous other afflictions upset all calculations of the farmers. True, that man can conquer these, make good deficiency of Nature and modify certain determining factors, but on a scale too small to admit of wide and large-scale application, while the methods applied are still too expensive to find universal application. Alkali-impregnation, artificial rainfall, and glass-house culture are still in the laboratory stage.

Many-sidedness of Agriculture. Agriculture is a many-sided activity, it is not a single industry, crop and animal husbandry are frequently practised together. Poultry-farming and dairy-farming are other aspects. In the sphere of agriculture itself multiple farming is practised. Rotation of crops tends to diversify the character of agriculture. Sheep farming and cattle rearing also punctuate a farmer's routine. Recently, scientific advancements have made possible a better utilization of what was so far considered as waste. The farmer is now getting more and more interested even in canning and preservation industries. The commercial aspects of agriculture are becoming increasingly important. In the field of agricultural engineering, the peasant's attention is being attracted to the more advanced methods of soil reclamation, drainage and anti-waterlogging activities. Agricultural pre-occupations are fast multiplying, and the peasant's life getting more and more variegated. The diversification of agriculture is its more important aspect. Even the term "agricultural produce" is generic and covers in an extraordinary measure, an almost infinite variety of customs and crops. The only impression conveyed by even a casual survey of agriculture is that it is easily the most homogeneous industry, with all its aspects, well fused, all its operations completely integrated, and all its various phases indistinguishably interwoven.

Agriculture, Industry and Commerce. It is not customary to treat agriculture as an industry. It may be pertinent to point out that the term *industry* covers three types, the *primary*, the *secondary*, and the *tertiary* industries. The latter two cover manufacturing and commerce, while agriculture is the only primary industry. But usually, we distinguish agriculture from industry and commerce. In this context agriculture is not styled as an industry nor as commerce. Thus in the narrow sense agriculture is not treated as an industry. But even this fine distinction does not stand critical examination, for verily, agriculture has its industrial aspects, such as oil crushing, rice husking and flour milling. Again, a similarity may be drawn between mechanised farming and industrial operations, as also between the application of scientific technique to both. In these respects agriculture may be treated as an industry. Again we may also refer to the *business* aspect of agriculture. Commercial farming is not quite a recent development; it is as

old as the trade between nations. And nowadays agriculture is getting more and more commercialised. Thus one is led to believe that industrial and commercial aspects of agriculture are quite as important as agriculture itself is. Loosely speaking, it may be possible to speak of agriculture both as industry and commerce. Though in the final analysis agriculture retains its distinctive character, still it may be correct to speak of agriculture as being closely related to industry as well as to commerce. In our opinion, this interdependence is quite intimate but the fact remains that, it is commerce and industry that are more dependent upon agriculture than agriculture is on these two. Here we study the economic divergence between them to be able to appreciate this point.

Economic Divergence between Primary and Secondary Industries

But for this economic divergence between the tertiary, secondary, and the primary industries, all human activity would have been styled as industry. The outstanding difference is the relative mobility and immobility of these occupations. The primary industries are the most immobile while the secondary ones are only relatively mobile and the tertiary pursuits, the most mobile. While the commercial enterprises can quite easily adjust their output and organisations to the external fluctuations and thus are highly adaptable and flexible, the industrial concerns are comparatively less so, these are more or less fixed and specialised. Expansion and contraction in their case is more a function of time and technique. Admittedly, technical advancements are now imparting greater adaptability, flexibility and mobility to the industrial plants, still they remain in a backward stage as compared with the tertiary industries. In the case of agriculture the immobility, inadaptability and inflexibility are more pronounced. The farmer is rather handicapped in this respect. He can neither take immediate advantage of altered technical processes nor can he benefit from fluctuations in tastes, fashions and modes of life. To him are also denied sudden changes, for Nature—his partner—exercises chronological restrictions on his activities. To cite a few examples, we find the planter waiting for about a decade before he can reap even the fruits of his labour, while in the field of cattle farming, one has to bide one's time before even the most prolific of animals can be made to respond to his efforts. The "primary" producer cannot possibly restrict or draw out what he has cultivated, and must be prepared to face the consequences of what he has done. His is a game where he has very few alternatives. In the economic language, we say that the "TIME LAG" in agriculture is quite prominent. This is more so because of the "distance" between the agriculturist and the market. The farmer is mostly unaware of the economic and technological trends of the times, he is rather conservative and often ignorant, while his poverty and illiteracy impose severe limitations upon his "capacity" to bridge this economic divergence between his industry and the secondary and tertiary

industries, by making it more adaptable. Apart from the fact that agriculture occupies a very important place in the world's occupational set-up we must recognise that it is easily the basis of all human activity. In the light of the above analysis, farming is the foundation of the secondary and the tertiary industries, even in an advanced society. But things as they are, a large majority of world population lives in a state of comparative backwardness. In these regions, the complexion of the secondary industries, is more or less of an agrarian type, or at least closely allied to it. Most of the industries are cottage industries, articles being manufactured from the locally available raw materials which are mostly obtained from land. These industries, therefore, derive their strength from agriculture. In the tertiary occupations in these regions again, most of the commercial activities relate to the buying and selling of agricultural produce. Quantitatively speaking, the bulk of the world trade still pertains to the disposal of raw materials. Agriculture, therefore, is by far the most important industry and the basis of all the other industries, whether secondary or tertiary.

AGRICULTURE AS A SCIENCE AND AN ART

Having understood the place of agriculture in the world economy we should now try to grasp what agriculture is, from the academic point of view. Knowledge is divided into sciences and arts. Without entering into the arena of controversy about the definitions of "sciences" and "arts" we may broadly define a science as that branch of knowledge which relates cause and effect, (as Chemistry, Physics, etc., etc.) and an art as creative. In this connection, we shall readily agree that agriculture is a science, for in it we study the causal relations of biological growth in relation to soil transformation. It is a homogeneous science, being comprised of plant pathology, cattle breeding, soil fertility and crop cultivation. Not that alone. The science of Agriculture is rapidly advancing and its domain expanding to draw upon the application of biology, sanitation, dietetics, engineering and allied research. The farmer's life is quite a big canvas, hence the field of Agricultural Science is daily expanding in various directions. In this respect, we must not omit to mention that in this rural science training occupies quite an important place; in fact, this aspect outweighs the other sides.

Application of Science. Recently, the increasing application of science to agriculture has improved soil productivity. Farming is being fast mechanised and the arduous jobs therein being reduced to simple operations. Scientific manures and artificial nutrients are now transforming both composition and mechanics of soil. Land reclamation is a pre-calculated process. Scientific cultivation is no longer left to itself, but proceeds on very rational lines. Meteorological forecasts, which are again the result of scientific research, are helping the farmer to fight the freaks of nature. Agricultural

Engineering is now an established branch of the wider science of Engineering. Farm accounting and book keeping have now been standardised along scientific lines, stock breeding, poultry farming and cattle rearing are being practised on the basis of scientific research. And Agricultural Economics has already won its place as an important branch of the science of Economics.

Art of Agriculture Agriculture is also an art, in the sense that it is creative. In no other form of human activity is creative activity so pronounced as in agriculture. The peasant is daily growing, producing and breeding. He is injecting life into the lifeless and is responsible for giving to the world the best that is in Nature. Raising golden harvests, breeding fine cattle and producing luscious fruits is his avocation in life. In fact, agriculture is the oldest human art, the term "art" being interpreted in the widest sense. The farmer first became an artist and it was only after a long time that he turned into a scientist. Agriculture was already an art, before it could be termed as science. We must appreciate the fact that agriculture as an industry is quite creative, and that as a field of study, it is an art, for the simple reason that it is creative and the farmer is responsible for creating good and bad. We must concede, therefore, that agriculture is both a science and an art, though abstractly speaking, it may be neither.

Agriculture and Business Activities As hinted above, agriculture mainly originated as a form of business activity. In his search for food, Man hit upon farming as a means of obtaining food. Later on, this activity expanded and Man began obtaining the raw material for his manufacturing business out of agriculture. Thus we see that farming is very intimately connected with economic activity. Realistically speaking, economic activities, even in the narrow sense of the term, embrace the farming routine. It is the farmer's "ordinary business of life" and it is his mode of earning his living or the means to the satisfaction of not only his own ends but also those of the world in general.

CONCLUSION

Agriculture and Economics Thus we conclude that Agriculture is intimately related to Economics. Any shifts in demand and supply must reflect back in the business of farming, its nature and scope. Even a change in the general economic policy will have its repercussions in general farming activity. Similarly, changes in agricultural activities have pronounced effects on the national economy. Recent mechanisation of agriculture has brought important far-reaching changes in the occupational distribution in an economy. Also the recent increasing application of science to agriculture had already resulted in changing the complexion of the economy where these changes have been wrought. Thus we are led to the conclusion that Agriculture

and Economics are closely inter-related. Farming is now having a profound influence on the economy while economic activities have been responsible for changing the face of agriculture, in no mean fashion. In fact, today, scientific advancement has reached a place, where we may halt for the time being and take stock of the situation and study what repercussions the modern practices in scientific agriculture are going to have in the sphere of national and world economy. Also, we must now analyse the import of the rapid economic trends in the farming business. Without establishing such a co-ordination, it may not be possible to avert the recurrent world crisis and the wastage of world resources consequent upon them. Here it is that intimate relationship between Agriculture and Economics is established, and a detailed study of Agricultural Economics is indicated especially.

SUMMARY

To sum up, agriculture is the foremost among man's activities and the most important human calling. It is a manysided business having not only technical aspects but also commercial ones. And it has some limitations of physical nature. The business of farming is intimately connected with industry and commerce. Recognising the economic divergence between the primary, the secondary and the tertiary industries we pointed out that the intimate relationship is one which must not be lost sight of. And it was also established that the foundation stone of the secondary and the tertiary industries is farming and farming alone. Next, it was stated, that Agriculture, from the academic point of view, is an important branch of human knowledge; and that it is both a science and art, in the widest interpretation of the terms. Lastly, we established the intimate relationship between Agriculture and economic activity. Thus we traced the link between Economics and Agriculture, and pointedly brought out the place that Agricultural Economics occupies today.

CHAPTER II

SUBSTANCE OF AGRICULTURE MODERN FARMING

Agricultural Science—Soils and fertility Humus and Productivity Crops, their kinds and types Plant Growth Farm Pests Plant Diseases Weeds. Farm Equipment—Cattle Breeding and Feeding Animal Health Applied Biology Agricultural Engineering Research and Education Summary and Conclusions

No apology is needed to acquaint the reader with the essentials of modern farming. Agriculture having become quite a specialised industry, familiarity with its terms and processes is needed before a correct grasp of the fundamentals of Agricultural Economics could be had. We must familiarise ourselves with the various factors of production in the farming business and gauge their relative importance. We must also understand some details, even though crudely, of the technique of farming to be able to visualize the routine in this industry and then we must be aware of how the scientist, with almost incredible ingenuity, is able to control the reproduction of animals and breed better stock, discover weed killers and with astonishing selectivity, cultivate new seeds to raise crop productivity in an astounding degree and invent new machine to "rationalize" the already modernised farming. It is not only a fascinating subject for study but also one which is both instructive and essential for the agricultural economist, the student and the specialist. Such a survey is a pre-requisite to an understanding of the basic and the fundamental problem arising in the field of farm economics. This study is not only a descriptive one but also somewhat analytical for otherwise our knowledge of the agricultural operations would only be superficial and therefore, inadequate and insufficient to form a good basis for a study of the subject outlined here. Enumerating the factors of production in agriculture, we can list them in order of priority as being soil, animals and man. In the study of *soil* we can have an intimate knowledge of its mechanics, composition and fertility, we also observe how the crops are grown, what their various types are and incidentally note the farm pests, and the efforts made by the agriculturists to eradicate the same. In respect of farm animals, we study the problems of their breeding and feeding and the contribution of Science to animal health. Coming to Man, the most important factor of production, we shall appreciate the work of the engineer, the educationist, the researcher and the extension worker. This means that references shall be necessary to Applied Biology, Applied Mechanics and Applied Management. Recent advances in the realm of veterinary science and technology, and in the field of community organisation and social education, in their

Impact on Rural Economics have to be noted. Rural Economics is a vast canvas. A farmer's life is the object of this study. The field of study is extensive, comprised of all the facts of farmer's life. Hence, we shall not only study the science of Agriculture as such but also address ourselves to the task of understanding the various problems that face the farmer.

AGRICULTURAL SCIENCE

In this chapter, however, we shall confine our attention mainly to an appreciation of the fundamentals of Agriculture, while in the latter portion of the book we shall also focus our attention on other aspects of rural life. Plants, we notice, obtain their nourishment from the soil and the air. Animal and cattle, we know, obtain their nourishment both from the plant and the air. Hence the plants are the basis of the two, as they supply nourishment to the animal and to human life. They obtain carbon dioxide from the air, through the medium of their green colouring matter, chlorophyll. This "carbon" is essential for the formation of such "organic" substances as starch, sugar, protein and oil. From the soil the plants obtain their nourishment, water and mineral substances such as calcium, phosphorus, potassium and iron, etc., etc. Another factor in plant growth is the substance which is responsible for the formation of chlorophyll through a process, known as photosynthesis, or the action of ultra-violet rays. The weather, rainfall, climate, etc., are other important factors in plant growth. It is not possible for the farmer to control and direct natural factors which he can, to a very great extent, influence such as soil and seeds, and this influences plant life considerably.

Soil and Fertility. Talking of soil first, we find that soil has a very complicated structure. Soil consists of mineral matter, organic matter and soil air, soil water, soil bacteria and soil plants. The fertility of the soil depends upon the interaction of all these components. The study of the soil falls into four categories: classification, mechanisms, chemistry and biology. In regard to classification, it is more fashionable these days to stress not the geological formation, but to concentrate upon soil surveys. These surveys, in turn, pay more attention to what may be termed "soil profile", i.e. the different layers of the soil from the surface down to the parent rock. On the basis of these surveys of "soil profiles", maps are constructed, giving a very good idea of the capabilities of particular soils. The composition of the soil is coarse and fine sand, silt and clay. The texture of the soil depends mainly upon the properties of "clay" and "silt" relatively to sand in it. Another component must be referred to: this is *humus* which means the decomposing vegetable and animal residue or the "organic" part of the soil. Clay and humus together form what is scientifically termed as *colloidal complex*;

or widely speaking, the power of absorption and retention. Mechanical analysis gives an indication of the suitability of the soil for certain crops. But by itself, mechanics of the soil is not enough, it must be supplemented by the chemistry of the soil. Four elements are usually lacking in the soil for the purposes of nutrition—calcium, nitrogen, phosphorus and potassium. A chemical analysis also gives us information about the acidity and alkalinity of the soils. Reliance is now usually placed on visual methods of diagnosing deficiencies from an inspection of growing crops. Another method of diagnosing deficiency is analysis of the foliage, specially in the field of horticulture. A still more rapid method is "true test" carried out on the leaf stalks. Laboratory methods of the chemical analysis are rather expensive and slow. Similarly, the scientist is called upon to undertake a biological examination of the soil, in order to find out what type of bacteria inhabit the soil and the sub-soil, as these micro organisms are also important in plant growth. The most important problem is to determine the acidity and alkalinity of the soil, this is done by the "soil indications" to cure acidity. The expert advice is liming—quite safe—for even an excess of lime will not injure the soil—it may only be wasteful. Modern science has found out methods of determining rather accurately the lime requirements of the soil. Usually ground lime-stone, instead of hydrated lime, is used, though the former may be required in greater quantities. Waste lime, obtained from industrial waste, is also being increasingly used. The other deficiencies are treated in similar ways, and when detected, specific chemical treatment is resorted to. Alkaline soils are usually associated with magnesium deficiency which is countered by adding magnesium salts to the soil.

Humus and Productivity The humus part, too, has received a lot of attention in recent times. Humus is formed when compost is ploughed back into the soil. Crops grown with the help of chemical fertilizers, but without any humus base, tended to diminish progressively in their yields. Humus is gaining popularity both with the farmers and the scientists. Sources of humus are compost (a controlled rotting down of animal and vegetable waste), sewage sludge (although it contains very little fibrous material) and farmyard manure. In the field of manures, nitrogens occupy a very important place. Ammonium nitrate is an important fertilizer. Ammonium sulphate and nitro-chalk and other artificial fertilizers are equally useful. The phosphatic manures are mostly available from the treatment of bones, e.g. bonemeal and super phosphate, basic slag (obtained as a waste product from the steel furnaces) and ammonium phosphate which has led to the manufacture of compound fertilizers in a concentrated form. These compound fertilizers are often known as "balanced fertilizers" for they supply the basic needs of the soil in a very composite manner though they often tend to "take", a problem now solved by the

process of granulation or powdering. The method of using fertilizers is by hand or by machinery or by combined seed and fertilizer drills, which are not only time-and energy-saving devices, but also eliminate waste. Before switching on to the next subject of crop production we may classify the manures as Nutrients, Humus and Fertilizers. The former are those which pointedly give nourishment to the soil, while humus provides for a better utilization of the soil food, and fertilizers are scientifically produced chemicals giving nourishment and food to the soil. It is only by a fair combination of all these that full utility could be obtained from the soil, and its productivity considerably raised. Specific manures will only be needed for specific soil deficiencies, and for raising specific crops. A judicious selection of all these is advised both from agricultural and economic points of view.

Crops, their Kinds and Types. Without plants and crops, animals and men could not exist. Even though cultivation is quite an ancient art, the science of plant breeding is of recent origin. Crop improvement has long been practised by means of selective seeding, or by hybridization, *i.e.* the crossing of two plants. By this process, certain such varieties of seeds have been produced that can grow in "unfavourable" climates and are disease-resistant as also high yielding with strong straw. These hybrids ripen early. The practice has been successfully developed in the case of wheat, barley and oats, while new varieties of potatoes, turnips and sugar-beet have been evolved. In order to raise good crops the farmer must buy good seed from good strains known for their purity and vitality. In the West, purity, vitality and even germination of seeds have been standardized and legislation enacted to protect the farmer against fraudulent practices. Crops are conveniently classified as *cereals*, *grasses* and *clovers*, while, from the technical point of view, they should be classified into exhaustive cleansing and restorative crops. The first include all those cereal crops which take away much of the nourishment of the soil while in the second category are the *root* crops known for their action in cleansing the soil, when the crop is harvested. And in the last category are clovers and grasses which are rich in nitrogenous matter and thus provide a ready nutrient to the soil. In view of these types of crops, modern scientific opinion strongly favours crop rotation so as to enable the farmer to reap the best advantage out of his soil without its being in any way excessively depleted. Greater reliance is also being placed on seed mixing or what is properly known as *mixed cropping*. Rotation of crops, however, is preferable to mixed cropping, for the latter is only a method for turf establishment, a very useful preparation for growing cereal crops. The crops which precede the main arables are known as the "nurse" crops. The modern trend is

to dispense with the *nurse* and to resort to direct seeding on a rotational basis

Plant Growth It may be interesting to get acquainted with the process of plant growth from the seed onwards. When the seed is sown, the first germination starts towards the sub-soil, the roots are the first to establish the plant on a firmer basis. Then the stem and the stalk begin to germinate upwards. The plant gets its nourishment both from the sub-soil and the air and the sunshine. The sub-soil, if it is retentive of humus, will "feed" the plant well, but if it is hard and clayey, the roots will not hold and the plant may eventually die. That is why the clayey and the rocky soils are unfavourable while the sandy and the loamy soils are the farmer's favourites. Here the soil bacteria, too, play their part, for they assist the roots in getting their food in a predigested manner, they decompose the plant nutrition in such a manner as to be receptive to the plant. If, however, the soil is rather loose and not overirrigated these bacteria act quickly and plant growth is encouraged. The conclusion, therefore, is that soil structure also determines the growth of plants and their vitality.

Farm Pests The agriculturist is not only concerned with the growth of plants, but also has to launch an almost continuous fight against all sorts of insect enemies. The farmer benefits in a two-fold manner from his entomologist friend, *firstly* by learning about the different varieties of insects and pests, their causation and growth, and *secondly* by getting equipped with such insecticides as may attack the pests in their most vulnerable period of developing. The true life-history of several bacteria has only recently become known to Man, while discoveries of such powerful insecticides as D D T, Nicotine, Benzene Hexachloride are still more recent. It is also advocated that sensible crop rotations and good farming methods will tend to minimise these pests and fungi which will starve for want of food. The various pests, insects and fungi, deadly to crops and cattle are the warble and maggot fly-eel and wire worms, moths and slugs, etc., etc. The D D T. (Dichloro-diphenyl trichlorodine) and B H C (Benzene Hexachloride) are powerful weapons in the hands of the modern farmers in the control of insects and pests. Another organophosphorous compound called "Bladen" or H E T P (Hexaethyl Tetra phosphate), developed in Germany is equally destructive to the fungi. Other similar but more effective chemicals invented are E. 605 (Nitro-phenyle Dithyl thiophosphate) or Paraphion and B I S, but care must be taken in spraying these because of their poisonous effect.

Plant Diseases Plant diseases are more expensive than pests, because of their national impact. They are often traced back to fungi, which range from the tiny yeast to the large toadstools. They do not have the green colouring matter chlorophyll, which assists the

plants in making their own food ; hence these fungi must get their food from the living or dead organisms—they are either parasites or saprophytes. It the parasitic fungies that cause plant diseases for the saprophytes only cause decay or the rotting of farmyard manure and thus are helpful to the farmer. The mycologist, in his fight against fungi, must identify the course and the life-history of parasite and then think out how best to attack them. Instances are the wart disease, potato blight, dry rot, leaf roll mosaic and virus pellowes. Quite a number of crop diseases are spread by seed. Great advances have been made in the methods of controlling these diseases. More important among the seed-borne diseases are buntsmut, leaf stripe and black leg. Wheat, barley, oat and sugar seeds are treated with disinfectants like formaline, etc. Nowadays, dry powders like Copper Corbonate are preferred. Other disinfectants are Ustulum, Clorophenele Mercury, but the defect with them is that they are poisonous powders and if inhaled may damage man's health. Distinction may be drawn between virus diseases and aphis diseases. The former are infectious, caused and spread by something which cannot be seen under even a microscope, though it is capable of passing through the tiniest holes. The virus is spread by a very small insect known as aphis, which carries the disease from one plant to another. The modern method is, therefore, not only to eradicate virus but also the aphis for without the latter the disease will not spread.

Weeds. In addition to diseases and pests, weed control must also be an important plank in the farmer's armoury. Weeds are those plants which feed on the useful ones. Not only that they draw nutrition from the soil for themselves, but they also literally live on the other plants. These weeds have a way of spreading quick. They seldom die. They move from one plant to another. They are often air-borne and may find their victims even in the far-flung places. These weeds prey upon all types of plants and cereals, and so far weed-resistant varieties have not been evolved, by the agricultural scientist. The farmers used to burn away the crops in desperation so that the weeds may also be burnt out of existence. But this is not a correct method for it involves a lot of waste and above all, a permanent extermination of the weeds may not result. Machines have been invented which root out the weeds and such sprays developed which are destructive to them. Still the problem remains only partially solved.

FARM EQUIPMENT

Next we turn our attention to the farm equipment. In this is included the cattle that serve the peasant most faithfully, the mechanical appliances that he uses and the training and knowledge that equips him to farm more efficiently. Of course, the cattle are the most important part of the peasant's

equipment, though in this mechanical age, the part played by the agricultural machinery is not to be minimised. And admittedly, the utility of the correct training and education to the peasantry can hardly be overestimated, for this is necessary both to provide him with the much needed enlargement of vision and ability to handle the mechanical equipment in a more efficient manner.

Cattle Breeding Cattle are the next important factor in agricultural production. The importance of the live-stock cannot be overemphasised. Their improvement, therefore, serves to raise the tone of agriculture. Stock breeding has already become a matter of scientific practice. The milk yield in the dairy cattle and the breed improvement are directly and closely interconnected. "Sex linkage" is also being practised by advanced farmers. In animal breeding two things are to be considered, genitive constitution of the animal and the environment in which it is brought up. The latter covers such external conditions as location, altitude, housing and management. The former usually scrutinises production records and progeny records. One thing is certain, *sc* that the sires must belong to good families. In order to ward off stray breeding, the sub-standard males are sterilised. Recently artificial insemination, too, has been practised successfully.

Feeding Regarding feeding of animals *four* considerations are kept in view, *firstly* the chemical composition of the feeds, *secondly* their digestibility, *thirdly* the animal's physiological needs, and *lastly* the post-digestive behaviour of the feeds. There are *five* constituents of cattle feed, carbohydrates (starches and sugar) proteins, fats and oils, mineral matter and vitamins in whose absence food will not act properly. Flesh and muscles contain largely proteins and some fat. Energy is measured by the amount of heat given by the food digested. The measure is "Calorimeter" which has helped dietetic research considerably. Tables are now available giving the composition of different feeds. Standards for the maintenance of meat production and milk yield of cattle have been elaborated. In devising animal rations, points to be considered are the live weight of the animal (this indicates the quality and quantity of food necessary for maintenance), the purpose of feeding (the production ration), and the animal's capacity for food consumption for it is no use giving it more than it can digest. One has also to guard against vitamin starvation. Minerals, too, must supplement the ration for without them the food will not be concentrated. *Lastly*, there is the control of bulk so as not to overload the stomach. Animal foods consist of ROUGHAGE and CONCENTRATES. The former refer to quantitative foods while the latter refer to quality. A careful blending of these two in keeping the local supplies is what is desirable. In the backward economy especially, the role of cattle can hardly be overemphasised.

Cattle are required for power, food, manure, etc., etc., and mechanisation being limited, greater dependence has to be placed on the farm animals to provide the farmer with his daily needs in respect of food, manures and power. And it is in these countries that the animals and cattle are most neglected. This neglect has its repercussions on the state and nature of agricultural productivity, and in turn, on the farmer.

Animal Health. The veterinary doctor too, has an important role to play in the peasant's life; cattle diseases must be countered before the contagion spreads. More important ailments are Tuberculosis, Infectious Abortion (*Brucella Abortus*), Sterility (*Trichomonas Foetus*) and Mastitis. All these diseases are infectious and the consequence in terms of life and money is huge. Tuberculosis often spreads to man from the meat and milk of animals and is very deadly. Preventive measures are adopted by vaccinating the suspected cattle with B. C. G. which is more or less now perfected and standardized. Another vaccine known as Strain 19, or S. 19 is being tried as a remedy against contagious abortion. Sulphonilamide in oily suspension gives satisfactory results in countering Mastitis, while sterility in cattle is under investigation. A very common disease, the foot and mouth disease, caused by a virus, leads to the development of blisters in the region of toes and mouth of the animal. Though seldom fatal, it is very painful and often results in the loss of milk yield. A study of this disease is rather difficult due to the impossibility of cultivating virus culture in glass tubes, and the only counsel is disinfection or slaughter. Lamb dysentery and liver rot are toxic ailments among the sheep; they have been countered by vaccine and serum. Other common parasitic diseases are lung worm and round worm, now conquered by disinfection and similar preventive methods. A mystery disease "lactation titany" brings about sudden collapse of the cattle by convulsion supposed to be due to magnesium deficiency in blood; it is countered by the injection of a small quantity of magnesium-boro-guloconate into a vein or under the skin by means of hypodermic syringe. Mention may also be made of poultry diseases; B. W. D. (Bacillary White Diarrhoea) and Coccidiosis, both caused by microscopic bacteria. Here again disinfection is advised especially in drinking water and food. Ill-health in animals and poultry may also be caused by bad nutrition especially in respect of trace elements such as Cobalt, Copper and Molybdenum: diseases caused by the lack of these elements are "Pine" (cobalt deficiency) "Sway back" (lack of copper) and are cured accordingly by feeding these trace elements to the pastures or direct to the animals. Similarly, the excess of an element may cause certain ailments, e.g. Teart in U K. due to the excess of Molybdenum; copper sulphate is used in countering it.

Applied Biology The contribution of the Biologist to the agricultural science can hardly be overestimated. The bacteriologist helps us to understand certain problems in soil fertility, plant and animal diseases and the handling of milk. By a certain test known as "Agglutination Test", he is able to detect the presence of disease germs. That discovered, the ailment is easily countered. But what is still more important is soil bacteriology, and the farmer is very much interested in the nitrogen of decaying material. Humus is essential for the growth of crops and for the retention of soil moisture. Recent advances have made it possible to prepare synthetic organic manures containing the same elements as compose farmyard manure. In the composting process, large quantities of straw being needed, scientific research was directed to this end. The decomposition of organic matter is carried out by the *aerobic* (air requiring) bacteria in the first instance and later on by the *anaerobic* species. In the non acid forms, the aerobic bacteria draw out nitrogen from the air and start decomposing the decaying matter, this nitrogen becomes available to plant life. That is why leguminous plants leave the soil richer than they found it. The nitrogen-assimilating bacteria live in the nodules or warts of these plants. Sometimes it is necessary to inject bacteria into the seeds to make this scientific process possible and to enable the crops grow luxuriantly. During recent years, researches have been made into the relationship of bacteria with milk and dairy products. Dairying has been revolutionised. Careful handling of milk is most urgent in order to ensure a supply of pure milk to the public. Pure milk means milk not contaminated with bacteria. Proper attention is now paid to the disinfection and cleaning of milk pails by sterilizing them. Hypochlorites and steam are used for this purpose. Cooling and pasteurising are also being practised to save milk from contamination and bacterial infection. Special tests have been devised to find out if the dairy products are infected or pure, these tests are gaining popularity. In order to improve milk yield "ensilage" (the preservation of green fodder without drying out the water) is coming back into favour due to advantages arising out of a certain fermentative process. Also marrow stem kale, rich in proteins, is fast replacing hay as cattle feed.

Agricultural Engineering Let us now switch over to the field of agricultural engineering and find out where it stands today. Man power and cattle power have been used since times immemorial, while the invention of the wheel made the utilization of the wind and the water power possible. Power utilisation, however, seems to have been revolutionised with the perfection of internal combustion engine. Oil engines are being increasingly used in agriculture. The most important single machine is the tractor with its capacity to do a lot of work in a short span of

time, for it can work with a relay of drivers. Also, the tractors can do jobs impossible for men and animals, *e.g.* reclamation work, deep digging and excavation of ditches and drains. With sizes ranging from the 100 horse power machines to those with less than one horse power, these tractors are growing very popular. Conversion sets have also been evolved wherein machines may become bigger and smaller according to the need. The modern tractor is increasingly becoming capable of performing a variety of different types of work such as ploughing, cultivating, thrashing, sawing and even pumping. It can also supply power to mowers, binders and small combine harvesters. The "unit principle" is being followed and the tractors are fast getting to be multipurpose machines capable of all processes on farms. Similarly the side drag line and the mechanical excavators are being applied to drain away ditches and dredge out the silt. Mechanical mowers are also being used for the digging of narrow trenches required for laying pipes. A small bulldozing tractor is employed to fill in the same trenches on the tops of the pipes. Mole drainage is another form carried on soils having a retentive sub-soil, *e.g.*, clays and marls. By it a narrow cylindrical tunnel is dug out to act as a drainage channel. The process is not too costly either ; it can be repeated at moderate cost and at intervals. Mechanical harvesters, binders and thrashers are in vogue to-day and have considerably simplified the various farming operations. Combined harvesters have been perfected and they are capable of performing all the three jobs. The problem of grain storage has also been tackled successfully by means of pneumatic conveyers and smaller elevator units. Another development of great importance is the combined drill which sows both the seeds and fertilizers in one single operation. The fertilizer and seed waste is thus considerably eliminated and a good crop ensured. Transplanting machines for use with cabbage and other similar plants have also been developed. Hammer mill for grinding corn, etc., is another interesting innovation. In the wake of the introduction of weed killers, farm spraying machinery has been invented. Grass grind plants have also been put on the market to meet the demand for a good drier of a cheap variety. But the most useful engineering development is the milking machine which not only saves a lot of labour and drudgery but also ensures bacteria free pure milk supply. Its features are a vacuum pump, a pulsater, a set of teat cups with rubber connections and a milk can, and as a result, milking parlours have become the craze, *e.g.* abreast type and the tandum type. In the former, the cattle stand, side by side, while in the latter type they stand in single file and are milked and washed in turn. Ingenious use of electric current is being made by the poultry farmers to encourage hens to lay more eggs when the demand is high. Poultry laying houses are illuminated after sunset to encourage hatching and to dis-

courage roosting Electric fencing is another valuable innovation, the cattle coming in contact with the fence receive a distinct shock but without any harm being done to them Gradually, cattle and other farm stock get schooled to these shocks and hesitate approaching the wire The problem of "rotary cultivation" is now being attacked, instruments and implements are already used in some market gardens A machine named "Gyro-tiller" patented some time back is, however, not quite suitable, being bulky, heavy and expensive, and a smaller type is being evolved. In short, power is applied now to almost every farm operation from ploughing to milking and from draining to spraying. The twofold objective has been to lower costs (this has been achieved in respect of large-scale farming), and to eliminate drudgery, human or animal

Education and Research. Before concluding this chapter, a word on education and research is necessary Constant efforts are being made to carry on agricultural research both in the laboratory and on the farm The results are verified and their application watched closely. New methods of farming are being developed, and commercialised Most of this work is being done in state experimental farms and laboratories But the more important problem is that of popularising these innovations and inventions among the rather conservative peasants For that purpose agricultural education both at the school level and the university stage is encouraged Extension services have been built strenuously to keep contact with the farmer and to encourage him to reap full advantages of scientific progress The medium is social and adult education, or radio talks or agricultural institutes or above all, the extension services which disseminate actively knowledge about the application of agricultural technique, farming science, and home economics, both among men and women.

SUMMARY AND CONCLUSIONS

To sum up, we may point out that the productive technique in Agriculture is highly scientific and specialised Progress has been registered in several directions, and Man is able to exercise more effective control over what was till recently regarded as a hazardous factor, namely, "the freaks of nature". The more outstanding achievements in this field have been noticed, and their operation in *modern* agriculture studied above But their far-reaching effects on the *general* set up is a problem, which could be tackled only in *Agricultural Economics* to which we now turn in the next Chapter.

CHAPTER III

SCOPE OF AGRICULTURAL ECONOMICS

Economics—nature and scope : Economic activities in Agriculture and Farming. Agricultural Economics—Definition and critique : Scope : Distinctions: Agricultural and Rural Economics. The Departments—Economics of Production : Economics of Marketing : Economics of Welfare : Economics of Credit: The Linkage—Sociological Impact : Land and Agriculture : Production : Effects : Incidence of Marketing, Summary and Conclusions.

Marshall referred to economic activity as arising out of the ordinary business of life and stressed the human aspect of the same. In his opinion man's activities fell into two groups ; religious or sentimental and business or economic. Though the former are more numerous, yet the latter, too, occupy not an insignificant place in human affairs. More recently, economic activity has been redefined by Lionel Robbins as that which seeks to adjust man's limited means to his multiple ends. This has a much wider import than the older classical concepts, for now Economics can be spoken of as the science of social adjustment. Economic activities are spread on a much larger canvas today than ever before. Economic relations arise out of activities related to the satisfaction of wants with limited means and they cover a great variety of man's action. Economics is, therefore, an aggregative form of activity which is given to satisfying wants, producing goods and exchanging and distributing them. Recently, the role of the State has also been recognised in matters economic.

Economics : Nature and Scope. We may safely generalise that economic decisions arise when we have to satisfy multiple wants with only limited resources. This is, therefore, a problem of scarcity. But it must not be confused with the problem of technique which is also similar in character. For the technician, too there is a type of the scarcity problem for he has to satisfy certain ends with his limited resources but the difference is that while he has to pick and choose between the means at his disposal to serve a special given end the economist has to pick and choose as between the wants and has to decide how best to satisfy them. The economic problem is, that of settling priorities between different ends while the technical problem is that of settling the best method for the best utilisation of different means. The economic and the technical are the two aspects of the same issue of scarcity but from different angles. Thus we see that Economics covers large ground and embraces almost all forms of human activity. An economic issue may arise in Engineering, Forestry, Industry, Finance or Agriculture. In short, an economic issue is faced when and where we pick and choose between several

ends, to get a definite amount of satisfaction. Marshall's terminology "ordinary business of life" becomes thus indistinguishably "social adjustment between ends and means" for verily the ordinary business of life is identical with the process of social adjustment. Subject matter of economics may therefore be said to consist of relationships arising out of man's efforts to secure food, shelter, clothing and many other requirements of life. Food being the most important and basic need, and agriculture being the only supplier of food, Agricultural Economics thus easily becomes the most important form of man's socio-economic activity.

Economic Activities in Agriculture and Farming Economic relations arise in agriculture, when commodities are bought and sold, when land is rented, or when labour is paid their wages. Hence the choice of a farm, live-stock, machinery to crops all these are economic activities where the element of choice is most pronounced. Since it is by means of labour usually, that human wants are satisfied, all agricultural activity is typically economic. We find that agriculture embraces most important of the economic activities of producing food and fuel. A class by themselves, these are conditioned by the physical environment of the farmer and the social climate in which he works. Physical limitations arise out of farming operations. As adumbrated in the first introductory chapter, the part played by nature in these operations is of a paramount character, that is why nature reflects itself amply in the agricultural economic activities. We may also point out that the farmer, being a product of the society in which he lives, takes into consideration the social aspects of his business. Apparently from an independent calling, the farmer has constantly to adjust himself to the changing commercial conditions and to the varying demands of the market. So apart from the dependence of the farmer upon nature, he has also to be a product of social and commercial conditions and is influenced by the variations in socio-economic climate. He has, therefore, to be very alert to the ever-changing economy, and aware of its guiding principle which if followed may reward him exceptionally well. He can hardly afford to follow the principle of subsistence farming for it may deprive him of his several daily needs. There is hardly a farming community to-day, which may be able to remain content within what it produces. Exchanging of farm produce, necessitated by rising standard of living, is a very significant economic activity and the peasant must, in order to reap a good economic benefit, bargain at terms advantageous to him. This is not to underrate the element of uncertainty in the realm of farming (in fact the chance element in agriculture is fairly prominent) but a clear grasp of the fundamentals of the Agricultural Economics would unfold several "mysteries" and enable him to visualise better the

secrets of making a good living. Hard work, clear thinking and skilful management do result in unusual success and high remuneration. Fundamental economic principles, when carefully followed, lead the way to success.

Agricultural Economics. Agricultural Economics may be taken as a branch both of agriculture and economics. But more specifically, it is rather intimately related to the latter; it may be defined as the application of the economic principles to agriculture. Jouzier, a pioneer writer in the field, defined it as the science of "agricultural household" or "that branch of agricultural science which treats the manner of regulating the relations of the different elements.....in order to secure the greatest prosperity of the enterprise." He has enumerated these as relations of contact, relations of activity, relations of value and relations of commerce. Under the first category are included supplementary, complementary, or competitive relations, e.g. simultaneous raising of crops, cereals and animals, etc. By relation of activity he refers to employment of labour and machinery, while the price mechanism falls under the relation of values. Marketing and retailing are all embraced by the relations of commerce. We understand, therefore, that Jouzier thinks of Agricultural Economics as a science which enunciates principles, underlying the co-ordination of the factors of production with a view to securing the net maximum profits, and the art of applying these principles to Agriculture.

Definition and Critique. Jouzier has been quoted at length for his original contribution in his work *Economic Rurale*, but this definition of his does not cover the entire field of Agricultural Economics. His definition only relates to that field of activity which refers to the organisation of the farm, but omits to include the social point of view so significant in this field of study. Broadly speaking, the subject matter of Agricultural Economics may be said to include agricultural production and marketing with a view to securing the largest net profit, consistent with the interests of the society as a whole. It embraces the relations of man, labour and equipment, the choice of crops, selection of live-stock and above all, the question of proportions in which all these may be combined. The economic superstructure is raised on the price of land and its rent, wages of labour and its productivity, cost of tools, machinery and live-stock and their utility to the farmer, and the return on the farming operations. This implies that Agricultural Economics takes away a large slice of the science of Political Economy. Not only that we take cognizance of economy in production but also seek justice in distribution. This latter problem has only special reference to the social effects of the wage system, the land system, the credit system and the marketing system in the context of comparative standards of

living in the urban and the rural areas and the relative opportunities for accumulating wealth by different sections of society, both in relation to the farmer's share in the national dividend and the general social welfare

Scope The scope of rural economics is not as vast as that of pure economics. This subject must attract the special attentions of the peasant and the politician so as to enable the former to help himself better, and the latter to enact useful legislation. The aim of this study is to bring about the necessary revolution of agricultural activity in harmony with the best interest of all concerned. This need not mean that there is a rule of thumb to which this science provides a clue; it only acts as a guide to those principles which have a special bearing in agriculture and modifies them to suit the special requirements of the farming practices. In this enquiry, as nowhere else, is Economics scientifically and intimately co-ordinated to the physical and biological sciences as implied in the service of Agriculture. More precisely, in Agricultural Economics we discuss the economic aspects of agriculture as understood and practised in agricultural chemistry, plant pathology, soil bacteriology, veterinary science and rural engineering and a host of other subjects, which find application in agriculture.

Distinctions Stress may be laid on the fact that Agriculture is mainly a technical knowledge and as such its economic aspects do not need any special study. But we must recognise that agriculture is many-sided (as brought out in the first chapter), and that every problem therein is also many-sided and not merely technical, therefore, agriculture does not permit of a very narrow and specialized approach. Hence a study of the science and technique of agriculture must needs be supplemented with an examination of the economic aspect which takes into account all the various phenomena of farming in their bearing both on economic and social activity. The result of the experimental stations, and the application of scientific knowledge, though useful in themselves, would remain fruitless, unless the farmer is awake to the economic significance of the same. It may also be pointed out that while the environmental and external stimuli do change but little from generation to generation, the economic forces underlying agricultural operations are ever changing. It becomes obviously necessary for the farmer to be constantly cognizant of the resultant of these economic forces and conditions, with a view to re-organizing his operations in the light of shifting costs and prices. It is probably due to this reason that some writers have confused Agricultural Economics with Farm Management. The advantage of using the former term in preference to latter is that the latter has only a limited implication and

does not cover subjects like national agricultural policy and planning, land mortgage banks, land tenures, rural reconstruction and national extension service, which the former does.

Agricultural and Rural Economics. There are three forces which operate on the farm ; the *physical* (e.g. the chemical, climatological and geological, etc., etc.) the *biological* (e.g. entomological, pathological and bacteriological) and the *socio-economic* forces. It is these last with which Rural Economics is concerned. They are the strongest in the sense that over these the farmer has no control, and that farming is undertaken solely for the purpose of making a living—an economic force by itself. Now these economic forces are not only confined within the precincts of the farm life. They are also of an external nature. Hence it is that the term Farm Economics would not be suitable enough to cover all the various aspects of Agricultural Economics. Farm Management, in the light of this analysis, would convey too limited a sense to correctly cover the complete implications of the subject. To cut the matter short, it may be pointed out that both farm economics and farm management are included in the study of Agricultural Economics. Recently, however, economists have started popularising the term “Rural Economics” instead of “Agricultural Economics” for the simple reason that the new term has a wider canvas of rural life to study. “Rural Economics”, it is claimed, covers every aspect of village life, cottage industries, community living, ruralisation of industry, and the urban impact. This term, it must be understood, though popularised by Jouzier and Carver, fell into disuse. It has now once again been rediscovered by modern writers. True, rural life is mostly influenced by agriculture but it would be more correct to say that agriculture, too, is increasingly changing under the impact of mechanisation and electrification. Similarly an increasing contact between urban and rural areas, has brought about a complete revolution not only in the agricultural sphere, but also in the sphere of marketing and engineering. More appropriate it would be to say that “Rural Economics” is a better term, conveying a bigger and a wider meaning than “Agricultural Economics”. But we stick to the term “Agricultural Economics” for it is more widely understood and far more popular than the new term “Rural Economics” used by moderns.

THE DEPARTMENTS

For the sake of convenience, we shall divide the subject into *five* departments ; Economics of Production, Economics of Marketing, Agricultural Labour and Relations, Land Economics and Rural Sociology. A word of caution must be sounded here, that is that this division in no way indicates the plan of the book ; we are only categorising the subject in the interest of clearer thinking and better exposition. We may not discuss

the contents of the subject under these headings, but what we seek to emphasise here is that these are the departments into which the study falls. In fact all these departments are very much interrelated and the study of one will necessarily involve an understanding of the problems of the other. It may not, therefore, be even possible to discuss these in an isolated fashion as these topics are inextricably interlinked. We have departmentalised the subject simply for reasons of simplification. And it is more fashionable these days, to study Economics from a dynamic angle and not from the static point of view. Hence we may not be able to study according to this plan, for it is only a static approach based on the assumption, "other things being equal". That is not what the changing economic conditions of the present-day warrant. Therefore, we shall proceed on dynamic and integrated lines.

Rural Sociology The subject, rural sociology, covers a wide variety of topics ranging from the demographic to the social. The composition and the nature of the rural population in relation to the total national population is studied for the understanding of the qualitative and quantitative aspects of the problem of rural countryside. This is important because what matters is the pressure of population on land. Other implications of this study are the extent and nature of rural unemployment and under-employment, especially in the relatively backward and under-developed countries and regions. The occupational distribution of population in the rural areas too has an important bearing on the pattern of rural economy. Another closely related subject is the study of society in the village. This social analysis unfolds certain trends in the countryside having an impact upon the productivity and distribution of agricultural produce. An assessment of the living standards of the rural masses is possible only through a study of rural sociology, which so far has remained a comparatively neglected subject. And lastly, the institutional impact of the countrymen on their urban brethren and the national economy is also brought out by a detailed study of the rural institutions, prejudices and superstitions, which play an important part especially in the backward economies and underdeveloped regions.

Land Economics Land Economics has recently been recognised as a very important part of Agricultural Economics. Land being the most important factor of production, representing nature, has its own peculiarities, and stands distinct from other factors of production. In pure and applied economics, too, land is quite separately treated. It is the recognition of this fact that the term Land Economics has come to stay and has occupied an important place in the field of rural economy. The subject is extensive though not as wide as Rural Sociology, still it covers topics dealing with land reclamation, land tenures, scale of farming, and sub-division.

and fragmentation of holdings. These issues have assumed some significance because of the drive for mechanization and scientific management in the realm of agriculture. Also with the rise of Socialism and Communism various experiments have been conducted in the sphere. Again, such movements as the Bhoodan and the Sarvodaya have also their relation to land. In the light of all these considerations, and in view of the fact that great strides have been made in soil genetics, the scope of land economics has also widened. This study is intimately connected with agrarian life. With the extension of recreational facilities to the rural areas, the proper utilization of land has assumed an economic and social significance.

Production Economics. Production economics, too, is a subject requiring intensive study. Agriculture is different from industry; the agricultural operations are not "walled" as the industrial ones are. They are not conducted within the precincts of a factory, hence they can hardly be styled as industrial operations. Again, while it is possible to produce one single isolated product in the factory, on the farm it is hardly feasible to have production excepting under conditions of joint supply. Also, industrial production is usually of large scale, while the agrarian counterpart is mostly in smaller units, though of course the collective and big farms are coming into vogue. Another distinctive trait of agricultural production is its greater dependence upon land, than in industry; howsoever large a factory may be, the land on which the plant is erected could never be so extensive as that under crops. And lastly, agricultural production is carried on in a traditional and institutional fashion, while industrial production is, even to the present day, a function of scientific advancement. This means that such concepts as rationalization, modernisation, and mechanisation have only limited application to the sphere of agriculture. We have to recognise, therefore, that agricultural production is a subject which has a distinct identity of its own.

Agricultural Marketing. Agricultural Marketing has attracted sufficient attention especially in the underdeveloped sectors of world economy. This is because of the fact that the problems of marketing are of a special character in the sphere of agriculture; commercial marketing of industrial goods does not present any special problems and the selling costs are not very high for most of the manufactures. The marketing of agricultural produce, however, is a rather complicated problem: apart from the high incidence of marketing costs, we are confronted with market deductions with the result that it becomes fairly difficult for the farmer to realise the full value of his produce. Upon this is heaped the difficulty of storing the perishable agricultural products; they will not stay and the cost of storage are rather high. Again, there is the "distance" between the farm and the market-place, with the

inevitable consequence that greater reliance has to be placed upon the transport system for the speedy disposal of this produce. To this is added the problem of price, which, in the case of agriculture, is dissimilar to that of the industrial price formation. The staying power of the farmer is usually low and he is further handicapped by his ignorance about market conditions and trends, that is why he cannot be treated on par with the widely awake industrialists. Apart from the movement of produce from the farm to the consumer, economics of marketing deals with the methods of establishing justice and fairness in these distributing processes through education, co-operation or state regulation. The middleman appears to be a necessary link in the marketing of farm produce, which is also being grown much in advance of actual consumption, and whose production is not so much an economic process, either. Therefore, the problem of anticipatory price levels is usually a headache for the farmer. Another complicating factor is the low staying power of the average peasant. The terms of barter (so to say) between the industrial and agricultural products are, therefore, of great import to the farm economy. Even in the advanced countries, these barter terms do matter in so far as they indicate the exchange value of the agricultural produce, or the real income of the farmer. All these various problems hardly ever arise in the industrial sector where goods are not so perishable, and barter terms not so material. The issues in the sphere of marketing and pricing of agricultural produce are inextricably interwoven with those of the other issues in agriculture. Marketing is, in the light of this analysis, a separate subject of study.

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Rural Labor Agricultural labour, the next department under examination, does not have the same topics to deal with as its counter parts in Pure and Applied Economics. Here we survey the problems of agrarian serfdom, and its feudal character, customary wages and the mode of their payment, tenancy and the various charges incidental thereupon, all these are grouped under the headings. One has to be conscious of the complex agricultural relations that subsist between the different sections of the rural community. Problems of agricultural labour have a speciality of their own as the agrarian labour is not so well united, trade unionism being very primitive among the agrarian labour, and the cohesive factors missing. Their conservativeness also adds to the confusion. The human factor which should be the most important in agriculture, is qualitatively speaking rather unenlightened and comparatively conservative with the result that the resigned attitude accounts for exploitation. For the State, too, the difficulties of enforcing minimum wages appear to be insuperable, as also the legislation for the provision of certain amenities to them and regulation of the appalling conditions of life and work among agrarian workers.

Rural Credit. To the above list may be added the department of rural credit. Peasantry, through the ages, have been in want of credit for various reasons which need not be studied here. It may suffice to notice at this stage that the peasant's avocation is of an uncertain nature, often punctuated by cycles and depressions: it is impoverishing and compels the peasants to be always in want of money. Also the farming costs are inelastic while the prices may register fluctuations with the result that the farmer's income experiences ups and downs, thereby making it necessary for him to work. Credit mechanism is unfortunately of an outmoded character, tinged with harshness and apathy. Consequently, the farmer, once in debt, always remains in debt and is seldom able to get rid of his mounting liabilities. A good position of credit, its correct volume and incidence in relation to the human and productive factors, the heavy cost of indebtedness in terms of high rates of interests, and, above all, the socio-economic impact of the same, both upon the individual farmer and the society are subjects not only of considerable interest but also pregnant with gripping analysis of an unusual interest, especially to the academician. It may be pointed out in this context, that in the study of the credit needs of the rural community there is inherent an institutional survey, for the rural structure of the community is of a particular type suited to its own needs, having undergone an evolutionary process lasting over many centuries. Still, theoretical conclusions could be drawn which may have some more extensive application. In certain countries, the credit system has been nationalised, while in most regions it has been given a co-operative complexion. All these studies are instructive for they acquaint us with experiments which are being conducted with some gainful results and enlightening consequences. The farmer, as well as legislator, should be aware of these trends so as to be able to pick and choose a pattern most suited to the economic climate of the country. The credit structure, it may be added in parenthesis, not only affects the farmers but also the agricultural prices for the credit costs do form quite a significant part of the total costs in agricultural production.

Planning. And last, but not the least is the vital subject of agricultural planning. Planning is fast enveloping national economic policies. Though economic planning covers the agricultural sector, still we must plan for agriculture on distinctive principles. It has a trait lacking in most other forms of economic planning. For instance, it can hardly be as correctly pre-calculated and precise as may be desired. The planner, (and agricultural economist), must notice the various cyclical changes in seasons, he must also appreciate their effect upon the general agricultural conditions and recognise the unknown and uncertain forces in agriculture. It is, therefore, that agricultural planning is different from other types of planning. Again the number of associates in the agricultural process is far too

large to permit of facile regimentation possible in other pursuits and industries. Also the individualistic outlook of the peasant is alone responsible to immunise him against outside interference and intervention, while his ignorance and conservatism deter him from taking a charitable and generous view of collective efforts at improving national economic standard. Such problems may not confront the planner in other sectors of economic activities. Economic planning is undertaken on a wider canvas, and Agriculture is all too important for the simple reason that without improved tillage national uplift is not usually possible, nor even desirable, keeping in view the place it occupies in the sphere of food economy of the country. Hence it is, that even in industrialised countries, agricultural planning (even if to sustain and nourish the industrial structure), occupies an unchallenged place. There are important aspects of state intervention in the rural sphere and they merit special study and examination before any planning could be successfully undertaken. All these points considered, we must concede that the planning of agriculture is a topic of study quite important for balancing the economy and quite distinct from other types of planning activity. One word more on this controversial topic: most of rural regions of the world are backward, hence rural reconstruction has peculiarities of its own which are conspicuous by their total absence in the advanced economies. In short, planning of the rural communities is not only a fascinating subject but also an interesting experiment without which study of rural economics is entirely useless.

THE LINKAGE

Having viewed, in brief, the various departments of Agricultural Economics it is only proper that we study the linkage between them.

Sociological Impact Rural sociology is related to land economics, for without this we could hardly find a clue to the problem of the pressure of population on land. Its link with the economics of production and marketing may be understood from the fact that the more productive communities are those which enjoy a higher degree of sociological stability. Fairness of marketing and distribution does influence, in no small measure, the degree of improvement of the sociological advancement in a rural environment. In the phenomena of economic growth, the impact of population growth on material resources is to be analysed. The converse is also true. Obviously enough, the closeness of the sociological and labour problems is much too apparent to need any further exploration and this is all the more intimate in a rural community where the agrarian labour constitutes the largest, though a silent, force. The institutional character of the rural credit organisations makes them all the more important from the point of view of rural sociology. None could dream of being able to plan the countryside without taking into account the various sociological

and institutional factors. Rural sociology is not only the starting point of the study of Rural Economics but also its very foundation-stone in every respect.

Land and Agriculture. Similarly, the subject of Land Economics is intimately interlinked with the other departments of study. Land is the very basis of all production; this fact is far too evident to need any exposition. Marketing and distributing of agricultural produce is potent enough to influence land values, the pace of reclamation and even soil cultivation, in view of the returns to the farmer. Again, land may well be the security against which credit may be sought. Hence the pattern of land distribution and land tenures very closely influences the credit structure in the economy. India may be cited as an example, where for the rising land values the peasantry has gone more and more headlong into debt. Lastly land distribution and availability of arable land may well be significant enough to condition agricultural planning and state influences.

Production Effects. Economics of agricultural production does also have an important bearing on the marketing and pricing problems in this sphere. In the event of a fall in production, the pricing and marketing structure assumes an entirely different complexion from what it would be in a period of boom. Also, the credit structure undergoes a rapid change, consequent upon a better system of marketing and assured prices. The credit needs may shrink in periods of boom and facile marketing. Also must not be discounted the part played by the quantum and composition of crops and cattle in the planning trends of the national economy; these will determine the priorities in planning and the form of state action especially in regard to agricultural welfare.

Incidence of Marketing. Marketing has come to occupy an important place in the rural problems, and is inextricably bound up with other aspects of Agriculture. Under a system which assures a fair return to the peasant the credit system will not be what it otherwise may tend to be. Mostly, the loans are negotiated by the peasant for the purposes of disposing off his produce, *i. e.* marketing. A good marketing structure would probably lower the demand for credit—an important factor in rural planning. One of the greatest tasks of national government is to ensure a fair return to the farmer and that is why the topmost priorities in agricultural planning refer to facilitating agricultural marketing, for a contented peasantry is always an asset. Lastly, the credit structure has also an important bearing upon the general planning system in the country. The part played by rural credit in effective planning can never be overemphasised, especially in view of the stress recently laid by some governments upon fact finding in the realm of rural credit.

SUMMARY AND CONCLUSIONS

To sum up, it may be pointed out that the above classification of the subject matter is not exclusive, on the other hand, these departments imperceptibly shade off into one another, and as shown above, inextricably interlinked. This mutual interdependence of theirs is evidenced by the fact that Agriculture is the pivot of rural life and economic activity in the countryside. It may not be advisable, therefore, to compartmentalise our study, still we may keep the above departmentalisation in mind when analysing the overall issues in their proper perspective. We may, however, have to refer to the agricultural activities in sectors other than those we study, so interdependent and integrated are the various phases of a peasant's life. Rural pursuits are neither commercial nor crudely economic, they arise from mixed motives. The underlying motives and incentives we propose to study in the next chapter so as to be able to visualize the rural scene in its variegated perspective.

CHAPTER IV

ELEMENTARY ECONOMICS

Scope of Economics—Subject matter of Economics : Micro- and Macro-economics : Diminishing utility : Substitution and Indifference : Demand and Supply : Valuation. Production to Distribution—Combination of Factors : Laws of Returns : Theory of Distribution. Economic Instabilities—Trade cycles and Fluctuations : Economic Systems : Fiscal Policy. State and its Activities : Economic and Other Activities—Taxation and Revenue : Public Expenditure. Conclusion. Summary and Conclusions.

Before launching out on a study of Agricultural Economics, it is proper to understand the principles of Economics so that we may be able to follow their application to Agriculture. Without this background, it may not be possible for us to gain an insight into the various agricultural issues, in their economic perspective. Agricultural Economics is a branch of Political Economy and, as such, a familiarity with the fundamentals of economic science is not only essential to serve as a necessary requisite for a grasp of this subject in hand but also important from the point of view of attacking the issues raised in the course of our discussions. For instance, in order that we may understand the problem of wage regulation in agriculture, we must be able to appreciate different issues in the controversy and also recognise the vital limitations of the same so that no time is lost in recounting these. Similarly to be equipped for a discussion of the problems of land tenure, we should have a foreknowledge of the economic implications of social inequality, with their repercussions on the economy in general. Also to evaluate the different models of agricultural economy we should be familiar with the mainsprings of economic activity. Hence it is that the reader need refresh his knowledge of elementary Economics. It may be stated here that this outline will be only a restatement of the elementary principles in so far as these are relevant to our study. We shall omit or at best make only a passing remark to the laws of Economics which have a slight bearing on the study of Agricultural and Rural Economics.

SCOPE OF ECONOMICS

First we analyse what the scope of Economics is. Economics deals with the problems of scarcity ; economic activity is designed to adjust limited means (capable of alternative uses) to multiple ends (human wants). This process of social adjustment goes on providing the impetus to socio-economic undertakings. The cycle of economic activity is punctuated with wants, efforts and

satisfactions when one want is satisfied another one arises and so on unendingly) Our object is not to detail the characteristics of wants at this place, suffice it to say that any problem wherein satisfaction of a certain want is the aim and wherein some effort is required to overcome the scarcity facing the consumer, is an economic one Hence the economic activities have a large canvas and their scope is wide Most of the human activities are thus covered by the term "economic" We have only two problems facing man, the *sentimental* and the *economic* Admittedly, therefore, economic issues relate themselves to a large variety of human problems

Subject Matter of Economics Human knowledge being divisible into two branches Sciences and Arts, we may point out here, that Economics is both a science and an art It is an art in the sense that we set out, when framing economic policy, to do something creative and constructive It is not a fine art nor a craft but a method of approach, being imbued with creative artistic activity, especially in the field of planning Economics is a science in the sense that its method of approach is the scientific one Deduction, induction, comparison, mathematics and statistics, all these are applied in economic investigation We proceed in scientific facts by means of a law or a principle It is, however, not an exact science like Physics or Mathematics, it is not a positive science Economics is only a social science coming from the parent stock of Sociology Still it may be credited as being more exact than the other sciences for we have in economic analysis the measuring rod of money, a tool that the other social sciences do not possess Money, thus, lends to Economics some exactness in the matter of measurement, both quantitative and qualitative Thus economic analysis is rendered more exact and permits of quantitative measurement Mainly because of money, and also, the application of statistical and mathematical methods in the field of Political Economy, they give it a better place and make it more positive or exact than other social sciences It is also a normative science, i.e. one which indicates the line of action to be followed in the light of given facts Sciences, we may point out here, are in the terminology of Prof Pigou, either *fruit bearing* or *light bearing* The *fruit bearing* species are those that may result in some concrete fruits, as the science of Mechanics, Chemistry or Pharmacology Economics is not a fruit bearing science in the narrow sense of the term though it does bring out some well-shaped lines of action *Light bearing* sciences are those that throw some light on a certain branch of knowledge and unravel the complexity of physical or social phenomena Economics throws considerable light on social phenomena and unfolds the mysteries of the same Just as Psychology tells us about the working of the human mind, similarly Economics brings to light laws and principles underlying complex human and social

phenomena motivating activities designed to raise the standard of life for the purpose of a greater satisfaction of wants. To sum up, Economics is thus both an art and a science, a social science of the *normative* type and a *light-bearing* one but more exact than other social sciences.

Departments of Economics. We may departmentalise the subject matter of Economics. Economics is studied usually under the sections of Consumption, Production, Exchange, Distribution and Public Finance. *Consumption* deals with the subject of satisfaction of wants and the generalisations arising therefrom. *Production*, on the other hand, treats of the provision of goods and services required for the satisfaction of these wants and the laws connected therewith. Under this heading are studied the agents of production, land, labour, capital and enterprise. Land, being the most important and basic of all these, and the term connoting all gifts of nature, is an important subject both for the economist and the agriculturist. In *exchange*, we study how values are determined; this is the most crucial problem in the science. Incidentally, we discover how international trade is carried on and foreign exchange rates fixed. We also gain an acquaintance with the working of banks and similar commercial institutions. Under *distribution*, the principles according to which national wealth is divided, is studied; we unfold the mysteries of rent, wages, interest and *profits. *Public finance* tells us the purpose and methods of state activity in economic sphere and the limits of the same. Economic fluctuations is another fascinating subject of study, which is usually rounded off with a description of various economic systems. Economic activity is integrated and, therefore, all these departments are closely interlinked with one another. Consumption is the basis of all economic activity. Without a study of the principles underlying want satisfaction, it would not be possible to know what to produce and appreciate the principles underlying Production. Production being ahead of Consumption, it does influence the pattern of want satisfaction to a great extent. Exchange, too, has its foundations in Consumption, while Consumption could not be possible without Exchange. Also it is from the sphere of Consumption that the pattern of Distribution is set, and Distribution in turn, determines the income limits of the consumers, therefore, their consumption habits, too, to an inestimable degree. In modern times, state economic activity and policy does influence and regulate the consumption routine in the community, while the consumers are able to control and direct the state economic activities, rather effectively in a democratic set-up. Thus we conclude that consumption is the be-all and end-all of all economic activities. Similarly, we discover that Production is the main determinant of exchanging and *vice versa*, exchanging sets forces

in motion that regulate and define the business of production. In accord with the contribution made by each factor of production is that particular factor remunerated. A more equitable distribution results in providing an impetus to accelerated economic activity, with a higher return in productive capacity than otherwise. Government economic policies are very much interlinked with the productive activities in the national economy. The exchange system of the economy is also inextricably connected with distributive system, under an efficient exchange system justice in distribution may be more easily secured than under an inefficient slow moving system. Again, a good money and banking apparatus make it easier and speedier to implement state action and policies in matters economic, in fact modern economies have a good system of exchange as their nerve-centre, without which most modernised systems would collapse. The present debate in Economics is mainly concerned with bringing about socio-economic equalities, a subject studied under Distribution. The State, under a democratic set up, is very much concerned with securing economic justice, that is why so much is being written and said about economic systems. Both the departments of Distribution and Public Economics are therefore very much interlinked. The conclusion is that the various departments of Economics are inter-connected, and, in fact, are the inseparable parts of an integrated system of study. For an understanding of the subject matter of Economics, we may visualise it as falling under different heads, but we must bear in mind that the subject is to be studied as an integrated whole.

Micro-Economics and Macro Economics We must distinguish here, between the two systems of Economics. Micro-Economics and Macro Economics. Generalising from the individual to the collective, the classical school took for granted that whatever held good for the individual also applied to the society, which in their analysis, was taken to be composed of individuals. The difference in the social and the personal points of view was ignored. Everybody worked in his own self-interest, that the society, too, would be similarly motivated. Economic analysis proceeded on this assumption for quite a long time, until the culminating point was reached by Marshall and Pigou, who represented the classical school at its best. Lord Keynes, however, getting aware of the inapplicability of certain conclusions of Economics to everyday problems of public policy making, pointed out that there was all the difference between the individual outlook and that of the policy maker. The former was impelled by his own narrow interest while the latter was invariably motivated by vital consideration of maximum social advantage. Again he distinguished between patterns of personal and social behaviour. Laying the foundation of Macro-Economics (the aggregative system), Lord Keynes exposed the classical tradition and ridiculed its assumptions. For instance,

to him *other things being equal* was a static assumption and an impossible one, for other things can never remain the same. Taking a realistic view of the situation, he discovered the dynamic analysis in economics. This dynamic approach takes cognisance of the ever-changing forces at work in the economic set-up. Expert opinion has also swung around to a recognition of these all-important facts and the economists are all appreciation for the Keynesian system. Economic analysis, in the realm of agriculture, must need be both macro-economic and micro-economic, for though the strongly individualistic approach of the farmer still persists, he is being tamed to take a broader view. Also, the process of rural progress is much more accelerated than ever before; hence this analysis must also need be dynamic. We shall have occasion, time and again, to refer to the conclusions of Lord Keynes, whose school of thought is gaining strength today.

Diminishing Utility. Referring to basic concepts of economics, we may explain the law of diminishing utility. An axiomatic fact in human behaviour, the law refers to the satiability of wants, when man continues consumption of the same article or service. Wants in general may be insatiable, but each particular want by itself is completely satiable. This is more correct in the case of necessities of life; the additional satisfaction gained from extended consumption goes on falling; in technical language we say "marginal utility" falls with continuous consumption. That is why we tend to diversify our consumption system and not confine it merely to a single article. It may also be noted that in the case of social utility services, the law may suspend its operation, for the larger the number of consumers, the greater the scope for the usefulness of a social service. Still, in general, the law is a practical pointer to the need for the diversification of the productive apparatus of a country so as to multiply the number of articles and services released for consumption purposes. This is the way to raise the standard of living, by checking operation of the law of diminishing utility, which is based upon the fact of the limited capacity of man, as in the case of food consumption, to which there is always a limit. Other agricultural products, most of which also fall under the category of necessities of life, obey this law. The law is, therefore, of great significance to even a casual student of Agricultural Economics. Another point of interest is that in the case of low income groups the law may not operate in the same manner because the available means in this case are severely limited. Of great consequence to the rural communities, whose consumption is mainly confined to the necessities of life, and whose income levels are low, this law stresses the needs for diversifying their demand schedules in order to raise their standards of living. The emphasis is not only on raising the quantity of production and progress, but also on want satisfaction. Mathematically speaking, the marginal utility curve cuts the X-axis; this means that instead

of utility the consumer may experience disutility, if he persists in the consumption of a single article. The farming communities, therefore, if compelled to continue the consumption of a single set of goods (i.e. if their want system becomes routine) will instead of getting satisfaction earn disutility and become discontented.

Substitution and Indifference The next important concepts are *Substitution* and *Indifference*. Substitution is an everyday phenomena which pervades all fields of economic activity. One article of consumption is substituted for another, because of the operation of law of diminishing utility. Similarly, the producer tends to substitute one factor of production for another, if only to counter decreasing productivity from the one in use. Substitution enters the province of public finance, for the State, always on the look out for increased revenue, tends to substitute one tax for another. The law of substitution pervades all forms of economic activity. This law is alternatively known as the law of maximum satisfaction, law of equi-marginal utility, and the law of expenditure. It is of special interest to the agriculturists for the correct understanding of the law provides a clue to the farmer's practices, he substitutes one article for another both in his consumptive and productive processes. Substitution, however, may not be sometimes possible, for the simple reason that there are indivisibilities in the economic sphere. There are serious limitations arising out of the fact of indivisibility, substitution will not take place in the smaller and fractional units, it may not be possible in certain cases where the units do not admit of further sub-division. Another limitation is that substitution will always remain imperfect. This gives rise to another set of limitations on the working of the law. Recently, the concept of indifference has been developed as an improvement on the law of substitution. Consumption being regarded as an aggregative act, substitution there is, but the role of substitution is, in certain cases, high, as between two commodities easily interchangeable. Importance has been attached to the *marginal rate of substitution*. An index of the high standard of living and an indication of the good type of consumption, it is maintained, is due to this marginal rate of substitution. The concept of indifference is a natural corollary to this. The fact about consumption is that the consumer tends to have as varied an assortment of goods and services as it is possible for him to have within his limited means. The position of indifference shifts with income and prices. First we take into account the price and income effects, for the indifference technique not only elaborates the substitution effect but also these two. It is possible to trace the behaviour of demand in respect of one article when its price rises or falls relatively to the other. For the agriculturist, aiming at a more correct perspective of anticipatory demand, this is a powerful tool. In the field of agriculture, especially, where the farmer is usually not

aware of the market conditions, and produces as a matter of routine, rather than out of economic calculations, the indifference technique provides him with an insight into the mechanism of the anticipatory market conditions in respect of his produce.

Surpluses in Economics. The concept of *surpluses* has also come to occupy a place of prominence in economic analysis. Two surpluses may be enumerated as being of use to the rural economist: the *consumer's* surplus and *producer's* surplus. The former relates to the divergence between the higher satisfaction obtained and the lower price paid in respect of an article or a service. While price is paid according to marginal utility, the total satisfaction gained is much higher and, therefore, the consumer reaps a surplus of satisfaction equal to the difference between marginal and total utility. This concept plays an important part in welfare economics especially when economic policies designed to secure maximum social advantage, are framed; the target is that of securing maximum surplus of satisfaction for the community. Rural communities being at a lower stage of economic development groaning under a low standard of living the one aim of Agricultural and Rural Economics is to secure maximum consumer's surplus. This is the key to a higher standard of living among rural societies. The sister concept, producer's surplus, reveals that just as the consumer's gains a surplus of satisfaction from his satisfaction schedule, in the same fashion the producer earns a surplus which may roughly be equal to the difference between the higher rewards obtained from his productive efforts and the lesser exertion put in, *i.e.* the difference between the earnings and real cost. The producer may have a special aptitude for a certain job and he may actually derive some pleasure out of it while he may also earn a lot. This may be truer still in the sphere of rural activities where the jobs are of a creative nature and give a lot of satisfaction to the creative instincts of man: that is probably the one reason why the agriculturist sticks to his job in spite of the heavy odds set against him and low earnings notoriously associated with his calling. Therefore, if we want to improve the conditions of the farmer and tone up his environments, the farmer may become more efficient than he would if only prices are stabilised at a higher level. The human aspect needs be stressed and appreciated, in this context.

Demand. The *law of demand* is another landmark in economic analysis. Demand, as understood in economic terminology, is the willingness of the consumer to acquire a certain good or a service coupled with his ability to pay. The demand schedule, which informs us about the aggregative aspect, conveys a more realistic meaning. We have anticipatory demand without which, in this age of ready-made wares, the producer could not function. There is the term *elasticity of demand*, or the responsiveness of demand to price

variations, this aspect may be of interest to the peasant in that it gives him a clue to the behaviour of demand in response to price variations. Noticeable are changes in demand which may be due to a variety of reasons such as variations in the quantum and composition of population and changes in fashions and tastes. Then there is *normal* and *abnormal* demand. Demand is normal when it obeys the law, *i.e.* demand shrinks with rise in price and *vice versa* or when it remains an *inverse function* of price. It is abnormal when it is directly associated with price fluctuations, *i.e.* shrinks when price falls and expands when price rises. This famous law, though hedged in with certain exceptions, holds good for nearly all types of goods in various degrees. In the case of commodities having inelastic demand, price, even if it rises, may not shrink demand, as a rule necessities of life fall in this group. Most of the commodities that the peasants produce, being necessities of life, belong to this group of inelastic demand and do not respond very much to price variations. Their demand is more or less set. The peasant, therefore, must not specialise in one commodity to the extent of bringing a glut in the market but must diversify his production in order to reap the best harvest and reach every pocket. A clear understanding of the phenomena of elasticity coupled with the grasp of the factors responsible for bringing about changes in the demand schedule is an essential pre requisite to successful farming without which the farmer may go on blindly producing irrespective of the market trends.

Supply A necessary adjunct to demand is the concept of *supply*. This deals with the production aspect of economic undertakings. Just as demand has its laws and forms, similarly supply has also parallel concepts. For example, we have the supply schedule which tells us about the various quantities supplied at various prices. The relationship between supply and price is a *direct* one, supply varying with price and not inversely. In the hope of earning a higher profit, the supplier digs out a larger quantity when the price rises. We have also the concept of *elasticity of supply* which informs us about the responsiveness of supply to price variation. Similarly *regular* and *irregular* supply may be interpreted to indicate the continuity or otherwise of the supply chain. In the case of standardised production and established demand, supply is regular, while fluctuating demand varying with changes in fashions and tastes reflect itself in irregular supply. This concept is related to that of demand, for it is only when an interaction of these "two blades of scissors" takes place, then and then alone, is the price determined. The position of supply is not to be ignored though it is usually to be considered in relation to demand, for a wise producer always takes cognizance of demand in order to correctly anticipate it and adjust the supply accordingly. That is why he stands

to gain or at best not lose much even if demand misbehaves at a later stage. Though it is often true that demand is first correctly anticipated and then the supply adjusted to it, it may not be wrong to suggest that sometimes the producer is able to educate the consumer and create a demand for his products by means of advertisement, publicity, propaganda or salesmanship. Often new fashions are created and consumer reacts accordingly. Such circumstances arise that he feels helpless and dare not refuse to accept the articles available. In this age of ready-made articles, when production is much ahead of consumption, even the most calculated estimate of demand cannot but be only a partially correct anticipation. The consumer is now unable to dictate his terms; it is the producer who holds the field. That this is so in a large part of the economic transactions should serve as an eye-opener to the peasants who should no longer be at the mercy of the consumer but adopt means effective enough to create demand for their goods, rather than go on feeling helpless in the matter. This dual relationship between demand and supply is significant not only from the point of view of Agricultural Economics but also that of the peasant and the planner.

Valuation. Regarding the interaction of demand and supply, the economists have treated of price determination as a function of price. In the short period, demand exerts a more dominant influence, while in the long period, it is the pull of supply that is far more effective. Demand is more or less the chief determinant of price in the short run, because of the fact that supply relatively remains inelastic and fixed. In the case of perishable articles, especially, where storage costs are relatively high the producer thinks it wise to follow demand and dispose of his goods at a price decided upon by the forces of demand. But this strong influence of demand weakens in the case of durable articles, *i.e.* those goods which can possibly stay without there being any loss in their quality and price. Though the anxiety of the supplier to have an increased turn over of his goods may tempt him to sell away his stock at remunerative prices, he would not like to dispose it off, at a price lower than the cost of production, while in the case of perishable goods costs do not matter for he would like to avoid a loss. But in the long period, when all adjustments of supply have been made to anticipatory demand, and demand is more or less forlorn, rather accurately, supply is so manipulated that there is brought about an adjustment between the two. Here again, we can broadly refer to two types of goods, *reproducible* and *rare*: in the case of former, competition among producers can bring down price to a level not lower than that of marginal cost of production, *i.e.* the cost of production or the highest costs of the average producer. The marginal producer is to be included, for without him, the production quota may not possibly be completed. Analysing the costs further, we are told that

they are of two component, the prime cost and supplementary cost, or the recurring and the fixed cost. Even if the marginal cost of production must cover at least the prime cost of production it would reduce itself to an unprofitable business. It is only the established or supra marginal producers, who can cover both the costs of production, the prime and the supplementary costs. The supply price must be covered by the long run price. Selling costs, too, play a significant role in price determination. Cost of production in this context includes the selling and the marketing costs but they must be treated as the first charge on the producer or the supplier and in case these costs are rather high, the supplier suffers heavily and has to undergo a sacrifice in this respect. In the case of rare articles, therefore, it is the demand factor that determines price as price equates marginal utility.

PRODUCTION TO DISTRIBUTION

Production has four agents, *land, labour, capital* and *enterprise*. Land stands for all the natural resources climatic and locational factors in the economy, these factors are relatively fixed and can hardly be increased in quantity. Land is considered to be the most static and independent of all the factors, for its inherent quality is to produce without even labour effort. Labour is the next elementary and basic factor of production. It represents all human toil, undertaken with a view to getting an economic remuneration. Labour supply is not rigid like that of land. But in the short period, it is comparatively inelastic. In the long run, however, labour supply can be made elastic, by following a suitable policy. Still labour and land as between themselves are sufficient and potent enough to initiate, maintain and continue production. Capital is regarded as the *producing* agent of the production. The modern production system is designated as the *capitalistic system* for the reason that capital, in a highly specific form, is being increasingly employed in the apparatus of production. Capital appears to be rather indispensable to the highly mechanised system prevalent today. Enterprise is that agent of production which is responsible for bringing all the other factors of production together and enabling them to make their contribution in certain productive efforts. The entrepreneur bears uncertainties of production, his is an anticipatory job to visualize the economic trends rather correctly. If successful, he reaps the golden harvest. In agriculture particularly, land plays a role more vital and more indispensable than in any other industry. Labour is also a necessary adjunct to land in agricultural production. In the backward countries particularly, labour is too much in proportion to land. We say pressure of population is high. Capital though employed in agriculture, is still not so significant in rural life as in urban areas. Still, with the increasing mechanisation of land

enterprises, more and more capital is being used in such operations. Enterprise has an important rôle in the agricultural sphere and a proper co-ordination of the various productive factors would go a long way to improve agricultural yield. But, unfortunately, the peasant is himself the entrepreneur, and ill-equipped with expert knowledge, he is a bad entrepreneur.

Combination of Productive Factors. It would be instructive to learn what principles govern the combination of factors. Broadly speaking, the factors of production would tend to be combined in such a manner as to secure the maximum output. The farmer will constantly apply the law of substitution and employ the various factors of production in such a manner as to equate their marginal production. But apart from this isolated fact, the significance of the price factor must also be recognised. The producer takes into consideration the cost of production. Mathematically speaking, his efforts would be to employ each factor of production in such a manner that the cost-productivity ratios for all of them are equal. The entrepreneur also needs take into account the fact of indivisibility for in this case, other factors of production have to be adjusted to this particular one. If this be positive, it is quite conducive to production (*i. e.* if the factor ratios are not rigid) but if these ratios are rigid or specific then the problem assumes entirely a different complexion and we have to search for the optimum point of productive combination the point where the production is the highest. Due regard must also be had to the specificness of a certain factor of production which may be indispensable to a certain process. In this case, the producer must have to employ the specific factor in a manner which makes it possible to secure maximum output. Another noteworthy consideration is that of scarcity, which makes it imperative for the producer to economise in this particular factor. Thus the optimum point may be a different one from what it would be under normal circumstances. The size and scale of the plant also influences the entrepreneur in arriving at a decision in regard to combining factors. In fact, limits to further expansion are set by all these considerations. Expansion could possibly proceed on till the optimum point is reached for beyond this production would result in a loss to the entrepreneur in view of diminishing marginal productivity, *i. e.* law of diminishing returns. Beyond the point, where the marginal costs are just covered by marginal revenues, an average producer would not proceed for in that case, while price may fall because of increased supply, costs may rise because of the law of diminishing returns thus resulting in an over-all loss for the producer.

Laws of Returns. A passing reference may also be made to the laws of returns, also known as the laws of variable proportions. When an investment brings about a proportionate yield in production the Law of Constant Return is said to prevail; a *margin*

expansion and investment has a constant return. But when additional investment raises the return per unit of investment it is the Law of Increasing Returns which applies. In case this trend is reversed the Law of Diminishing Returns is said to operate. Increasing returns means decreasing costs, which can be due to economies, internal and external, in the productive sphere. Where the influence of man is predominant we find that the productive trend is towards increasing returns or diminishing costs. But these trends are reversed when nature has the upper hand and man finds himself unable to effectively control production and reap to the fullest all its economies. Certain factors like scarcity or unavailability in large quantity of certain factors and their diminishing productivity are responsible for the emergence of diminishing returns or rising costs. Extractive industries like farming and fishery are examples in the point. When man and nature balance, constant costs or returns result, for example, cigar and sola manufacturers. Economists like Marshall and Pigou have pointed to the inevitability of Law of Diminishing Returns or Increasing Costs, which, in their opinion, is bound to operate in all industries for there are positive limitations to the vigilance and control of man over them. Lerner, however, believes that the Law of Diminishing Returns can be averted and points out that the optimum point is the point where diminishing returns begins to operate. A sane producer would hesitate to expand beyond this point. In his opinion, as also in the opinion of others of his way of thinking, the three laws of returns are just phases of the same *Law of Variable Proportions*. The Law of Diminishing Returns is easily the most important of all these because the peasant is always busy countering it in his predominantly "natural" industry.

Distribution It is the *theory of distribution* that reveals the secrets of the apportionment of the *rational dividend*. In fact, all the agents and factors of production work indistinguishably in co-operation with one another, just as all the fingers of the hand work in writing out the manuscript. The only method by which we could approximately find out the relative contribution of each factor is by means of gauging its marginal productivity. This gives rise to the *Marginal Productivity Theory of Distribution* which stresses that each agent of production, being homogeneous is paid according to its marginal productivity. Modern economists tend to believe that it is *transfer earnings*, i.e. it is what a factor of production earns in an alternative occupation, that determines its share out of the national income. Taking each factor separately (in order to gain a better view of the problems of distribution) we find that the rent of land accrues as a differential surplus which arises out

of natural factors, *e.g.* location, fertility and above all scarcity. Demand for land being composite, transfer earning would also be another equally valid explanation of rent. Be that as it may, the term *rent* has been extended to connote the fact of scarcity and is applied even to cases of temporary shortages for example, the element of rent may be discovered in differential wages and the earnings of certain capital goods getting scarcer in the short period. Similarly, there is rent of ability which serves as an element of profit. Interest is said to be paid as a price for the use of capital. Without going into the controversial issues regarding interest determination we may content ourselves by saying that the marginal productivity theory applies in this case. The rate of interest approximates roughly to the marginal productivity of the capital borrowed. Attempt is also made to apply the transfer earning explanation to account for the phenomenon of interest payment. What capital could earn in a more gainful occupation, would tend to be paid as the price for its use, its mobility assured. Profits are regarded as the payment for uncertainty-bearing, for it is difficult to assess the marginal productivity of the entrepreneur. Now profits are being explained in terms of entrepreneur being the *residual claimant*: the last person to be paid after all other factors of production have been suitably remunerated. Transfer earnings also explains profits for what the entrepreneur expects to earn in any other industry may approximate to the earnings in his present vocation. But this is quite a controversial issue. In the case of the agricultural entrepreneur the most suitable explanation would be in terms of the entrepreneur being the residual claimant. Wages are usually paid according to marginal productivity. Even under effective trade unionism, wages could not be levered upto a level higher than that of marginal productivity. Labour exploitation becomes a fact when labour is paid less than even the *discounted* marginal product, the discount being reckoned in terms of the period that must elapse before the product can be sold. But because of the fact that labour is a highly perishable commodity and the labourer has very low staying power coupled with his ignorance and illiteracy, the labourer is usually paid much less than what an economist might calculate as being his just share. Personal and customary considerations, too, enter this sphere to further rob the labourer of his well-deserved remuneration. Protective legislation has been enacted in order to regulate both his remunerative standards and the conditions of work. This regulation becomes effective under strong trade unionism, and in its absence remains a dead letter.

ECONOMIC INSTABILITIES

Trade cycles and *economic fluctuations* have been puzzling phenomena. Various explanations have been advanced regard-

ing their causation. Unfortunately, these cycles visit agriculture as their first victim and leave it the last of all. Often their starting point is agriculture that is why great emphasis has recently been placed upon the physical factors being responsible for the causation of these fluctuations. Other explanations, too, have been advanced the monetary factors, the psychological forces and shifts in demand and supply. These explanations concern the agriculturist very little. One thing to be noted *in passing* is that economic fluctuations are characterised by *synchronism* and *periodicity*. These cycles synchronise, *i.e.* they occur together and are simultaneous. Secondly, they have a certain amount of periodicity about them, they can therefore be predicted with some correctness. Remedies have been suggested to counter them or at least to lessen their severity. Steps have been devised to lessen the uncertainty of the climatic effect by the extensions of irrigation works. Other suggestions relate to revolutionary policies being undertaken, *e.g.* the complete overhauling of the economic system. Socialists advocate the adoption of their own creed as being an antidote to the persistent inequalities of wealth. Socialism claims to bring about a better distribution of wealth and incomes so that victimisation by underconsumption could be eliminated. Communists insist on the total abolition of private property and the complete nationalisation of economic activity, this step, they hope, will serve to even out the existent unequal social basis and afford a good basis for smooth economic activity. A communist set up claims to be fully equipped with the efficient apparatus for planning, the main purpose of which will be to eradicate all economic fluctuations. Fascists have been of the opinion that over all state control, as it existed in Germany and Italy, was potent enough to do away with most of the economic upheavals but in view of their reactionary philosophy and practice this creed is out-of-date. The capitalistic structure, it may be admitted, however, is not able either to eradicate these cycles nor even to mitigate their severity except by imposing severe state regulation and direction. A compromise solution is the adoption and practice of *mixed economy* which while steering clear of the rigidity of every system, accepts the good points of all the various economic creeds.

State Activities Probing into the sphere of state activity, we discover that the State has certain economic functions which may be of the nature of control, regulation and protection of weak economic sections. There are also the potent weapons of Public Finance, Taxation and Expenditure. Important theories may be mentioned here. The Re-distributive Theory emphasises the re-distributive aspect of taxation and expenditure. Its main purpose appears to be to rob Peter to pay Paul. The Social Welfare Theory now modified by the doctrine of Maximum Social Advantage apparently

stresses the welfare aspect. The concept of equality is also imported in Public Economics and interpreted as being able to secure justice in taxation and expenditure. The Keynesian group is wedded to the realisation of fiscal motives in public finance, mainly full employment, *i.e.* the fuller utilization not only of human resources but also all other natural resources. These are the main financial theories which may be of interest to the agriculturists and the rural workers. In the sphere of taxation, too, one should be aware of the concepts of the *impact* (the initial burden of the tax) and *incidence* (the final burden) and *shifting* of the tax burden forwards or backwards. Similarly, in the field of expenditure there are certain checks and regulations for the proper disbursement of the public moneys. The sphere of Public Finance requires a careful study by the agricultural economist. In the realm of public policies mention needs be made of the fiscal policy and the corresponding measures. Industries, including agriculture, may be granted the benefit of protection against the competition from foreign goods. Subsidies and financial assistance may also be given to provide a stimulus to anyone group of industries. Fruits of research and the advantages of technical advice may also be placed at the disposal of the backward industries like agriculture. The sphere of the State is getting to be more and more extensive and is now ever widening in its scope.

SUMMARY AND CONCLUSIONS

The above summary of elementary principles of economics is, admittedly, a bare skeleton outline. Its main purpose is to acquaint the casual and lay reader with some elementary concepts which may find recurrent references in this treatise. We do not claim to have made even a statement of main issues in Economics. The important realm of money has been omitted quite, but that does not very directly concern the rural worker or one specialising in the problems of agricultural economics.

CHAPTER V

INCENTIVES AND IDEALS

Economic Motives in Agriculture—Satisfaction of Wants Accumulation of Landed Property Community Spirit and Legal Compulsion Economic Incentives in Agriculture—The Incentive to Produce and Secure a Better Share out of the National Dividend The Income Incentive A Higher Standard of Living Economic Stability Self Sufficiency Profit Motive Attractives in Agriculture—Provision of Attractives Rent free Land Reclamation Facilities and Tax Exemptions Community Progress Price Stabilisation Marketing Regulations Ideals of Agriculture—Patriotism Religion and Duty Recognition and Leadership Habit and Joy . Ease and Independence Pride in One's Work Summary and Conclusions

A study of the economic activity is both interesting and instructive. Motivation of human activity has been traced by psychologists to various causes. The mainsprings of this activity may be economic, social, religious, political or even purely personal. It may be useful to distinguish between incentives, attractives and ideals. What impels a certain individual to action may be termed as an *incentive*. Enforced idleness may prove to be as boring as enforced labour. Man, a restive creature, is always impelled to do one thing or another, not just out of selfish interest but out of variegated motives. Incentives may be defined as all those impulses that are responsible for setting the tune to man's activity or initiating the same. An *attractive* on the other hand, is what attracts or tempts the labourer to work. Good working conditions in a certain factory may serve as an attractive, better environment may attract more labour. An *ideal* is only an abstract notion, and may remain something worthy of emulation. It is the satisfaction of a higher impulse leading to a nobler end in view. One's patriotic zeal may be an idealistic end while the satisfaction of wants may be termed as an incentive, and the provision of better working conditions, an attractive. This distinction is quite pertinent in this context. We must clearly understand what special motive is an incentive, another an attractive and still another only an ideal. Right selection of these is of use to the expert, the legislator and the peasant.

ECONOMIC MOTIVES IN AGRICULTURE

Talking of *motives* in agriculture, we can think of them as economic and social. But mere classification will not lead us anywhere, for the simple reason that economic motives often shade away into the social ones. The primary incentive impelling all human beings who engage in any form

of economic activity is the desire for a decent living and the provision of recreational facilities. In some instances, it is the *rational* motives and incentives that prevail but in a number of cases it is the *irrational* that do predominate. One may point out, however, that we are concerned with rational and accepted ones, and not those which may endanger law and order or may involve people in abnormal and unsocial undertakings. From a variety of incentives, social, political or even personal, we have to disentangle those that have an economic bearing and an economic colour. Again, we study not the broad economic incentives as such but only concentrate on the study of those which prevail in the sphere of agricultural activity or at least strongly colour and influence the same.

Satisfaction of Wants. In the minds of many farmers, the desire for the acquisition of means with which to satisfy their wants is supreme. All economic activity being reducible to an adjustment between multiple ends and scarce means, farming is also directed to the same end. Money is a most important means of satisfying one's wants. Hence the strongest incentive for the peasant is to acquire money with which to be able to satisfy his wants. The extreme case is that of the miser who wants to lay by a stock of money for hoarding purposes, or with which to buy land merely for the acquisition of it. More normal is the desire for money to buy food, clothing, shelter and entertainments. In the case of the majority of the farmers, money which impels them to undertake the agricultural operations, is to be used in the satisfaction of their wants and those of their dependants. Still it may be pointed out that the money motive is not the only one compelling the farmer to work on his farm. Personal likes and dislikes also count for much.

Family Affection. The satisfaction of wants does not have narrow implications : if it relates to one's own self, it also relates, and equally strongly, to the satisfaction of wants of one's family. As a man grows older and maturer he thinks less and less of his own immediate satisfactions and more and more of the satisfactions of his dependants. The incentive for the upkeep of home and the family is the most elementary instinctive form and often takes the shape of great family pride, so characteristic of the peasantry, nearly in all the regions of the world. The desire for a large family estate, a dignified status for them, a good education for the children and a laudable social standing, all these are just significant aspects of the larger motive of satisfying wants. In the opinion of Dr. Marshall, family affection and preservation is one of the strongest factors in all economic activity. And in conservative farming communities, where the family still stands preserved as an integrated unit, and

the disintegrating forces of modern civilisation have not made any inroads, the incentive of maintaining the family is strong

The Community An extended form of this incentive is the desire to satisfy the demands of the community at large. While the satisfaction of one's own wants is quite selfish, confined only to one's person, the motive of adequately providing for the family is a nobler and a better end. Still this operates within the limits of subsistence farming and the complexion of agriculture to-day, is definitely is not the subsistence one. Hence the wider aspect of agriculture is the satisfaction of the wants of the community. *The simple farmer is impelled by the motive of being able to provide for the food and raw material needs of the community.* Not that there is only an element of pride in this work, but also a sense of satisfaction in that he feels he is making an important contribution to the well being of the community. Imagine the farmer supplying the needs both of his immediate neighbours and far flung countries, he would irresistibly be elevated at his role that he is, by following this profession, enabled to meet the most important needs of the community, namely, food, timber, fuel and raw materials

Acquisition of Land d Property Another important motive in the rural sphere is the acquisition of landed property by the peasant. The institution of private property has played an important role in all types of economic activity. In the village particularly, land is the most important property. In fact, the insinctive hunger for property and possession is very strong in human beings. Among the peasantry the most important incentive, that he incidentally satisfies, while pursuing his occupation, is the acquisition of land, which gives him social status in the rural community. We should not confuse this with the piling up of estates, but merely the possession of so much land as may ensure for him his rightful place in the rural set up and a decent living for his family and dependants. Experience in land reforms has conclusively shown to what extent "land hunger" is raising a crop of problems for the well meaning farmer and the ambitious planner. Therefore, the motive for the acquisition of the landed property is an important one to the peasant. Viewed from another angle, we may describe this mouve as only a form of family affection. The farmer, by acquiring more and more landed property, only seeks to assure a good heritage for his survivors. Conservative as his outlook on life usually is, he is more concerned about the welfare of his people, his kith and kin than the more enlightened and more civilised urbanities are about their own family and dependants

Community Spirit Community spirit also fires the agriculturist's imagination and is quite a recognised force motivating him to his

pursuits. The peasants are often more charitably inclined than workers in other spheres of activity. More devoted to their community than the townsmen, they are not tinged with a strong sense of individualism. Mill's philosophy which saturates the urban community finds it hard to percolate to the villagers. The ideals of community service set the peasant in motion and spur him on to action. This is true of the backward regions of the world ; this means the majority of the world farmers. In times of political emergencies, it is farmers who come forward, not only to grow more food crops even at a cost to their self-interest, but also to lay their lives for the country. Hence community spirit finds expression in the farmer's willing and voluntary spirit for he strongly feels that in this way he is able to contribute effectively to national welfare. Also, many a farmer aims at promoting agriculture, not merely for his own ends but in order that the community be well known for its fine farms and the quality of its fine agricultural products. Public opinion may be so organised by the leaders of the community as to rope in more and more farmers to the task of destroying obnoxious and injurious weeds ; one may not be able to eradicate them from his own farm, unless the other farmers also act in the same manner and co-operate. Another example, that may be cited, is the active participation of peasants in the community projects which are on the anvil in India. The underlying idea is that of mutual helpfulness ; the peasants improve the environmental effects which concern all those living in that locality and what one man alone could hardly achieve by himself. Agricultural co-operation, too, is firmly rooted in the context of the community spirit. Suffice it to say here that peasantry is fired with a much stronger community spirit than the urbanities could ever be. In this respect, the peasant is born and brought up in the traditions of joint and collective living, which have decayed or are dying out in the hearts of most townspeople.

Legal Compulsion. Legal compulsion (to satisfy the requirements of the law) is another important motivating factor in farming. In certain towns and cities, law prescribes the standards of milk, *i.e.* the amount of impurities that could possibly be sold in milk, and to which the farmers have to conform. Similarly in certain countries, farmers may be compelled to seek permission for making changes in their cultivation and crops ; and make it compulsory for them to conform to law. Thus legal compulsion may rightly be regarded as a strong motive underlying the agricultural operations. In Agricultural Economics, as in pure theory, the tacit assumption is that all is well with the law-abiding citizens living in a democratic state. Hence one of supreme economic motives in all communities is legal compulsion. While in the factory industries it may be possible to conceal such activities and sometimes even contravene the provisions of law, in agricultural

practices and in rural life, which are mostly of outdoor nature, it is hardly possible to do so. The peasant more than any one else, is to obey the dictates of law, hence legal compulsion is an important factor motivating agricultural activity.

Motives and Incentives An examination of motivating factors in agriculture brings out a complex variety of factors which go to provide the impetus for agriculture. Motives are those impulses which have before them the immediate realisation of an objective, of the speedy fulfilment of a desire. They must needs be distinguished from incentives, which are deeper undercurrents of the human mind. While a motive is visible even to a casual observer, the incentives are not so apparent. We have to delve deeper in order to appreciate what incentives impel an agriculturist to go ahead with his job. There are social incentives, in agriculture, and also political and environmental ones. For example, an agriculturist may have to pursue his calling only due to his caste, as in India. It is purely a social force and incentive provided herein is non-economic. Similarly, there may be a taboo against the use of certain manures like bonemeal. While the cultivation of certain crops may be a religious and social obligation with some, others may look upon it with disapproval. Wheat cultivation may be, considered as a sign of respect, as in certain ancient communities while vegetable growing may be regarded as unworthy of the high castes. Here the incentive is socially significant.

ECONOMIC INCENTIVES

But we should only be concerned with economic incentives, and not with the uneconomic ones which we may prefer to christen as "ideals". It may also be pointed out that economic factors and forces lie deeper and are stronger than the non-economic ones. Admittedly, therefore, it is the economic factors that are at the root of more superficial social and customary ones. Again while the social (and other non-economic) factors may undergo a change with changes in social preferences and values, the economic forces have a most stable character and are, therefore, more fundamental. It is not our purpose to underrate the social, environmental, and customary influences but the fact which we seek to stress is the changeability of these as compared with the permanence of the economic incentives. Hence it would not be so fruitful a study, if we were to examine at length the nature of non-economic factors. More vital, from our point of view, is the recognition of the place and importance of economic cross-currents especially in the study of agricultural motivation. However, we shall make a detailed study of the non-economic undercurrents of rural actions and round off this study with an examination of objectives and ideals.

Incentive to Produce. The foremost among these incentives is the *incentive to produce* and secure the higher share out of the national dividend. Agricultural production in itself is an artistic experience and visibly the higher the production the greater the share it brings to the peasant except in abnormal times of agricultural depressions. The farmer tends to diversify his productive activities from the same end. He wants to increase his earning power and for this reason he tries to achieve this objective by both intensive and deversified farming. Mixed farming has, therefore, sprung out of this particular motive and so has also crop planning. All efforts aimed at increasing his productivity, e.g. the use of fertilizers, reclamation of soil and its proper drainage, emanate from this single incentive to produce more and still more. In fact, all his attempts to eliminate the middle man, by means of direct marketing, or by adopting the co-operative line, are only attempts designed towards the same end of securing for the peasant a greater and greater revenue. This incentive, it appears, is the single strongest one compelling the farmer to undertake the various economic activities and should be taken note of. Even at the cost of repetition, we shall point out that this particular consideration finds a more pronounced expression in his efforts directed at getting a bigger slice or an increased income. The object of production is twofold: subsistence or self-sufficiency, and commercial or remunerative. The farmer cultivates the lands with a view to be able to provide for himself and his dependants amply. This may be termed as *family farming*, or *subsistence farming*. This is widely prevalent in the backward communities. But in the more advanced regions, it is the commercial or remunerative aspect that is more dominant. In a progressive community, it is the economic calculations that begin to exercise a more important influence in the life of that community. All commercial activities are aimed at increasing the national dividend and may, broadly speaking, be termed as securing a larger share out of it. This incentive has an important economic bearing on agriculture in all types of economies.

The Income Incentive. The *income incentive* is the second more important one in agriculture. An enhancement of income is what is sought in all economic activities and the agriculturist could not be an exception to it. In his efforts to have subsidiary industry added to his routine, he seeks to increase his income. His objective is to eliminate waste simply because he wants an inflated income. The income incentive is prominently evidenced in his search for more lucrative avenues of marketing. High income is considered a necessary adjunct of social prestige and the farmer does aim at it, probably because he wants to enhance his prestige in his own community. Also, an increased income will satisfy his craving for acquisition of more and more landed property, to which we have referred to above, when discussing economic motives in agriculture.

And obviously enough, an increased income alone could satisfy his needs and wants to a greater extent. Thus the income incentive is not to be underestimated—we must give it its due place of prominence. It may, however, be pointed out that with greater enlightenment and under progressive conditions, this particular incentive becomes stronger and stronger.

Standard of Living All human beings desire to have a higher standard of living and so do the agriculturists. Economic activity is not undertaken simply for the fun of it but mainly because it ensures a *higher standard* of living to the peasant and his dependants. While it is true that in the backward regions the agricultural pursuits are followed more as a mode of living, in the more advanced rural communities of today, there has developed a strong desire to lead better lives and this objective is very definite. In his effort to achieve a higher standard of living the peasant is actively aided by the Government, for the one objective common to all the welfare states, is the struggle for a higher standard of living for all people. Thus both the individual and the national points of view provide very potent incentives underlying the farming operations, namely, better living. The individual undertakes these activities as he actively strives after this objective; he puts heart and soul and takes to farming as a means to this end. The State encourages him to make improvements in this sphere and itself launches out on vast and expensive projects with the same end in view. In a democratic state, maximum social advantage is the target, it means more food, better clothing, more decent living and ample provision of raw materials.

Economic Stability Economic and social stability have, of late, become important parts of the programme of progress in civilized community. In their search for economic stability, the peasants strive to be efficient at their jobs. Orderly agriculture proceeding in clockwise regularity ensures to the farmer a permanent income, and, therefore, economic stability. Agricultural improvement aims at eliminating or at least minimising the various uncertainties and conquer Nature. Irrigation works are extended, weather forecasts made, crop estimates broadcast, in order to acquaint the ignorant peasant about uncertain trends and establish agriculture on a firmer footing. The objective is to eradicate unknown factors or at least to know them in advance, so as to take precautions and adopt necessary measures. No wonder then that the State undertakes to assist and guide agricultural operations with a view to economic stability in the national interest for without stabilization in the agricultural sector, stability would only remain a dream. From the narrow individual point of view of the peasant cultivator, agricultural operations are for the advancement of the economy. The peasant is also after securing stability for himself and his family this search of his results in his improving agricultural methods and technique.

Economic Self-sufficiency. In the thirties, the world witnessed a huge international slump. There was also a craze for attaining *self-sufficiency*. "Battle for wheat" was fought in the highly industrialized countries of the West, while the agrarian ones sought to become more balanced. Although with the establishment of normal conditions, economic self-sufficiency does not remain an immediate goal, still food self-sufficiency is undeniably the target and considered to be a desirable goal of public policy. An important incentive to better agriculture is, therefore, traceable to the drive for national economic self-sufficiency especially in regard to food and raw materials without which balanced economic progress may not be feasible, nor even desirable for such superficial progress would not retain its permanent character. Hence we must appreciate the importance of this factor from the national angle. From the narrower individualistic point of view, it may be considered that the farmers, too, undertake these operations for reasons of attaining self-sufficiency for the simple reason that farming is, every day, getting more and more variegated and assuming a more and more complex character, being now comprised of sheep farming, stock breeding, and even tinning and canning, etc., etc.

The Profit Motive. And, above all, the *profit motive* is the most important in all human activities undertaken under the regime of Capitalism. In the older communities, the profit motive was not so glaring as in the more advanced regions where peasantry does make rather exact economic calculations, which are now possible, because of the statistical material available. In backward regions, economic life being more integrated, the individual profit motive is overshadowed by the communal incentive to which greater importance attaches. Still it would be unwise to rule out the profit motive altogether. It only lies hidden and remains dormant, or assumes a communal form and a collective shape. It remains quite prominent and these days, a most pronounced one. Arising out of the institution of private property, which is legally sanctioned and protected, (thus creating a strong desire to further these interests of individualistic sort), this motive is fairly well entrenched. With the establishment and recognition of the institution of private property, the profit motive further strengthens. For there is a strong desire to have more and more of property. In the presence of strong individualism, prevailing all around, this motive gets more enforced than otherwise it could be. That is because of the fact that the gains out of one's personal profits may divert to one's own self and one's family. As adverted to above, this motive is, however, weakest in backward societies, which have more closely knit and fused social living. The individual likes to participate in the profits that he reaps and rejects the idea of having to part with them. When such taxation policies are followed as might slice away the profit

considerably, (with the result that the individual gets a very small share), this motive is also weakened. Evidence of this fact is available in certain communities. If properly used, this motive strengthens economic activity and provides a spur to it, as also furthers economic progress. But if wrongly utilized, the motive may assume the form of social exploitation resulting subsequently in social antagonism and social upheaval. That is why profits are limited and the State intervenes in the interests of the weaker section of the society and does not permit the profiteer to cross a certain limit. It may be pointed out, however, that in the sphere of agriculture, very rarely is a stage reached when the profits cross the safe limits, that may happen only in Zamindari dominated societies, while in the case of smaller peasant farms the profits are not so high for the simple reason that the farming system there is usually of subsistence type, or at best family type.

ATTRACTIVES IN AGRICULTURE

The place of *attractives* in agriculture is not to be under-emphasised. Attractives, as per our definition, are what induce an agriculturist to put in more and more work, and so become effective in increasing farm output. They are, so to say, *designed* or *created incentives*, and the farmers may respond to them by increasing their production. In agriculture, the majority of the farmers being illiterate, these attractives may be expected to play a more fruitful role than in other walks of life, for the shrewd industrialists or the clever trader may see through this game and refuse to actively respond to these forms of manoeuvring on the part of the State or the society. Measures of fiscal and economic policy which may be grouped under the heading "attractives" may be of twin types, those of an immediate nature and those which may bear fruit only in the long run. The *immediate* attractives must not be misunderstood to bear results forthwith, for in agriculture, at least, it will certainly take some time for any efforts could bear fruit, considering the term that must elapse between the cultivation of a crop and its harvesting. Hence *immediate* is not to be confused with what is productive at once, these *immediate* attractives may be understood as bearing results in the short run. They assume various forms such as, tax exemptions, rent free land, reclamation facilities, and technical assistance. The *remote* attractives, however, are such attractives as take some time to become effective. Under the latter head may be grouped community progress, market regulations and price stabilisation. They are, however, important props of agricultural policy and have undoubtedly an influence on the agricultural conditions in the country but only in the long run. In framing an agricultural policy, special stress must needs be laid upon this distinc-

go far in roping the farmer and bringing him round to be of greater and greater use to the community and also be more productive. Reclamation is not quite an easy job, it is an arduous task which an isolated farming community, ill-equipped and unacquainted with modern machinery, could not undertake so efficiently as the one fully armed with agricultural implements. Reclamation, in the light of this fact, could not be imaginably undertaken by individual farmers as such, quite ignorant as they may be of the modern methods and techniques of reclamation. It would not be wrong, therefore, to emphasise and recognise the role that this *attractus* is bound to play in enticing the farmers, who may otherwise not be roped into undertake cultivation. It may be noted, in passing, that his *attractus* is of course more effective in regard to farmers who are ambitious, but without land, than those who are well settled on their lands.

Tax Exemptions A more effective means of attracting agriculturists towards the same end is that of *tax exemptions*. Taxes may, in fact, become important tools in fiscal and economic policies. Taxes may deter or encourage certain investments. A wise taxation policy may promote the welfare of the community and infuse in it a zeal for production. A reactionary taxation policy will, on the other hand, damp economic initiative and even lead to a speedy deterioration of the productive efforts in the economy. It may be noted, without fear of contradiction, that taxation policies and practices are likely to provide important economic incentives in the social sphere. For the agriculturist, in particular, tax relief may be of immediate benefit, and may encourage him to adopt a course of action in which this could be reaped, for whatever is of immediate relief to him, will certainly interest him. A man of limited means, who would jump at any opportunity given to him in this respect, is likely to benefit himself to the fullest in that respect. It is a matter of common knowledge that in times of food crises and shortages, a usual tool of policy is the promise of tax exemptions in respect of certain food crops, which the State aims at getting cultivated and in respect of which the State wants the production to be increased. And the resulting increase in agricultural output is invariably very much inflated. Thus have food shortages been conquered and shifts in agricultural productivity brought about. The burden of taxation appears rather heavy to the agriculturists, especially in view of his low income, and the universality of the tax impositions of the taxes like land revenue, etc., on all agriculturists. Thus immediate efforts may bring about the desired results. Tax reliefs and exemptions are therefore important *attractus*, generally speaking, and in the agricultural sector, particularly.

Community Progress *Community progress* is another *attractus* which stands midway between the immediate and the remote ones.

The farmer may be attracted to the idea of community progress, and once impressed with it, may strive harder and harder in order to get the environment altered for the better. This appears to be the impelling motive behind the *Shram Dan* movement (contribution of voluntary labour) announced by Acharya Vinoba Bhave. The farmers work together free of any remuneration, in order to get the rural environment as much improved as is possible for them to do. They build roads, dig out canals and drain marshes, all by their own voluntary labour in their spare time, just to tone up the rural life and better its surroundings. The environments have definitely been improved and the farmers have, to all intents and purposes, worked with whole-hearted zeal, characteristic of missionaries. But this tempo of theirs cools down, if the ends sought after are rather remote and not immediately realisable. To evoke their enthusiasm, therefore, the objective set before the peasant (who may not be so far-sighted as the industrialists and the traders may be) must not be set in the distant time; but be possibly achievable in the short run. In the backward economies, especially, the situation is not a little different. The peasant is ignorant and inherits a fatalistic outlook on life. He does not like to come out of the shell. With a vision, rather narrow and suspicious, the peasantry are not far-sighted enough to appreciate the utility of long-term planning nor do they recognise any values away from their homes and hearths or their immediate local environments. Hence this *attractive*, "community progress", is of interest to the peasant especially in the backward regions only in so far as the progress aimed at has an immediate local bearing. In the advanced countries, however, where the peasant is rather enlightened, this object may also find an appeal even if it has some distant results promised and they are of a national colour. Still, in these advanced communities, the peasant is relatively conservative (as compared with others) and, therefore, this particular *attractive* should be realisable in the short run and be of regional value. In short, it may be conceded as an important weapon in the hands of the policy-makers.

Price Stabilisation. Price stabilisation is another important plank of State policy with reference to agriculture. It is not our object to unfold the intricacies of price policies followed by different States (that will be done at length in a later chapter), but simply to bring out the bearing, price policies have, on the problem of *attractives* in agriculture. Price stabilization may have both immediate and ultimate repercussions. Agricultural prices, if they are on the downward trend, may be stabilized, and this weapon itself would ensure the efficiency of the farmer-entrepreneur. Being assured of a good price, especially in times of economic fluctuations, he will have a greater impetus to produce without fear. Prices are fixed often both at the floor level and the

ceiling one after leaving a fair margin for the agriculturist. The cultivator is thus assured of his income, whatever the ruling market price may be, and thus he has no worry on that score. This affords a strong impetus to him to go ahead with his cultivating operations unhesitatingly, and steer clear of all economic disturbances. The only difficulty that the administrator might encounter appears to be that of enforcing these twin levels, the floor and the ceiling ones. Evasion of the price regulations may recur, as also *leakages*, therein. Price stabilisation problems are thus not easy and have to be tackled at length. Suffice it to bring out the bearing of such policies on the rural economy. In the wider rural sphere, the stabilisation of prices tends to have the effect of ironing out and minimising price ups and downs, which in turn have quick repercussions of an adverse nature. Thus we may agree to stabilise prices at a suitable level or, at both ends. In the backward economies, in particular, it may be desirable to smoothen the transition in the economic sphere which is often marked by serious fluctuations—the pangs of progress. In this period, at least, price stabilisation may be strongly advised. In the modern economies, too, economic upheavals arising out of the prevalent speculative practices do reflect in the rural sphere, hence it is desirable to even out these disturbances, and also to provide a stimulus to the agriculturist by assuring him a fair return on his investment. Price stabilisation, especially when these disturbances are frequent, in the agricultural sector, is strongly indicated.

Marketing Policies Marketing facilities and regulations, if rightly enforced and correctly instituted, do have an important bearing on rural activity. Under most economic conditions, the marketing problem assumes a significant role, one which the peasant has to face boldly and one that he can solve only with difficulty. In case he is lucky enough to find a ready market for his produce, it would go far to ease the situation and he would be attracted and impelled to improve agricultural productivity more readily than otherwise. Suitable marketing provisions thus afford an *attraction* to the farmers who may be desirous of extending their operations. If a good market, and therefore, a good price is assured to him, he will be filled with zeal. In a country like England where standardization of market products has gone ahead, the peasant is not much worried about the sales aspect of his produce. This is how they have been able to get the agricultural operations extended, the revival of agriculture is due to the extension and perfection of marketing facilities in rural England. Similarly, the procurement drive in certain parts of India did assist effectively in accelerating agricultural production and bringing the farmer nearer the urban markets, although through the machinery of the State. That has raised the farming production. Even the marketing facilities, strictly speaking, are

only a distinct *attractive* capable of yielding some concrete results, only in the long run; still the farmer's outlook on life, may undergo a change if he is assured of a good return on his crop. He need not then feel so uncertain about getting the fruits of his labour. Hence the provision of marketing facilities will be a definite help to the farming operations. In underdeveloped and backward economies, in particular, the peasant stands to gain much out of the strict enforcement of marketing regulations, for he has, usually, to suffer several deductions, from what is due to him out of a certain bargain. He would, therefore, be much exhilarated when his full share is earned by him. Even in the advanced regions, the provision of marketing information to the peasant might assist him in rightly planning his crops.

IDEALS OF AGRICULTURE

More important than *incentives* and *attractives* are the IDEALS in agriculture. Life is not run on strictly rational and economic lines, especially in the farming communities; these societies are mostly governed by the force of custom and traditions. There is, for instance, the dictation of religion and social customs and conventions and, above all, certain abstract ideals. That is why, the patriotic feeling is so intense in agrarian regions. The rural folk, being simple people, lack that rational and analytic faculty, which might lead men away from idealistic ventures. They are steeped in idealism and often stake their all, just for the sake of fulfilment of certain ideals in life. Abstractly speaking, where agriculture is the predominant industry and life mainly rural, the agricultural pursuits are followed mostly out of a traditional mode of life, rather than because of economic calculations. That in itself is the reason why shifts in agriculture are fewer than they are in industry which is subject to greater change and a victim of economic disturbances. *Ideals*, or non-economic motives, persist in agriculture as nowhere else. This is not with reference to farming alone, but also to the wider range of rural operations, as for instance, dairying, where the *ideal* may not be sheer economic gains but the preservation and maintenance of cattle life, as interpreted in the religions and social spheres. Similarly the cultivation of food crops, in times of national emergency, may be regarded by the peasants more as a social obligation or a patriotic duty than only as a means to making profits. This need not convey the impression that the farmer is quite a Yogi, living in the stratosphere and not conversant with economic factors or cognizant of them. What is sought to be stressed here is that ideals or non-economic considerations dominate rural life more than the economic ones. Agricultural pursuits are mainly idealistic pursuits for the farmer.

Patriotism. The foremost *ideal* in rural life is that of *patriotism*. In modern democratic institutions, the citizens are politically wide-awake, and political motive influences their lives to considerable

extent It may be held, however, that politics has not percolated to the countryside, especially in the backward regions But it may be pointed out that even though the political controversies may not have reached the peasants, still they are very patriotic, judging from their readiness to enlist in large numbers whenever a national emergency arises And then we must also appreciate the fact that the peasant is being dragged into the struggle for liberation and freedom, even in the backward economies and, therefore, political fervour fires him now as never before Thus patriotism is an ideal very strong with the man behind the plough and wise governments do exploit this ideal both for planning and for fighting national emergencies such as food and raw material shortages, knowing full well that the peasants respond to this very actively In nearly all the countries of the world the national defence forces are mainly recruited from the peasant another proof that the patriotic urge is the strongest in the rural communities, whether the backward or the advanced types In short, this urge is an overbearing ideal for the agriculturists and quite an effective one in rural life Full use, therefore, must be made of it

Religion and Duty Religion and duty are the next in importance in the list of ideals of which may take note Many a rural community is intensely religious, examples may be cited of India, France and Arabia It is well known that even in these countries where the hold of religion is weakening, it is in the rural communities that religion impels man to a strong sense of duty, the teachings of all religions boil down to the ideal of Duty No wonder then that the farmer feels that it is his duty to handle his property so as to advance the social and religious interests Also, many are influenced in their dealings with their brethren by the ideals of right and wrong, established by the preachings of their religions Observance of religious holidays and festivals (often coinciding with the harvesting and cropping seasons) and devotion of some time to self-improvement and personal religious pursuits have an important place in the farmer's routine of life But the strong sense of duty that all religious teachings inculcate in men strongly influence those who are devout devotees to their religions, that they take to farming as a matter of duty and religious obligations even if that does not pay them in monetary terms True, that caste and superstitions effectively bind people down to certain rigid forms of activity and pin the farmers to certain types of social undertakings But the agricultural significance of the same need not be lost sight of Religion also breeds a sense of rotten fatalism in the peasant and, therefore, affects his ambitious programmes It might also encase them in their shell All that is true, still religion has its bright side also, and when dealing with this strong social force, we must be cognizant of this aspect of religious observances We may conclude by saying that it is a strong force which threads the rural life and may be used for good or for evil, provided the planning authority does so

Recognition and Leadership. Another equally strong impulse, of a non-economic character, is that of *recognition* and *leadership* in the social sphere. Farmers, as all human beings, are strongly influenced by social appreciation and react very favourably to recognition by the society. They are impelled to harder work and more intense activity, when they expect social applause. Highly educated men may not be strongly influenced by these considerations but the peasant is invariably highly strung by these forces. Even in communities which do not permit distinction in the social spheres, conferring of titles and awards is a practice accepted in the case of farmers who are spurred on to more intense activity by such recognition. In more restricted sense, these conferments impart a certain amount of leadership, which in turn influences the peasant to still more effort. The value of these twin ideals of recognition and leadership are compelling forces that strongly colour the human mind, more so in the rural environments, where the peasant, in search of social recognition, caters to being accepted as a leader, in a manner quite exceptional. There is another aspect of the matter still more significant. Hero-worship is a strong force in human motivation. The farmer, too, is a hero-worshipper. to a very great extent, and right leadership will, therefore, influence his actions to an inestimable degree. Once convinced about the bonafides of the leadership, the peasant goes far to emulate his leader and tread the steps outlined by him. Hence the institution of good leadership and its right selection will very much inspire the peasants and impel them to speedier progress. His sense of emulation being a very strong one, the peasant would be ready to emulate the successful farmers. That is where the virtue of demonstration in the rural sphere lies. In this context, no differentiation need be made between the advanced and backward regions except in that, in the latter zones, there is a total eclipse of leadership and the right type of progressive leaders are very hesitant to settle in the rural areas. Proper steps should, therefore, be to inculcate correct leadership.

Pride in One's Work. *Pride in one's work* is a very potent motive in all human activities. Psychologically speaking, discontent arises only when the correspondence between work and social instinct is lacking. With a greater adjustment, between ambition and activity, the human mind becomes more active, and, therefore, more efficient. Work is considerably more productive and consequently becomes more fruitful. This correspondence between effort and output may be brought about through conscious devices, as in the case of an educated person adapting himself to mechanical work or by means of one following the dictates of one's aptitude or by working on lines of instinctive activity. While in the case of intelligent workers, this may not raise much of a problem, for certain jobs may be reduced to routine (out of which the sense of pride may not issue forth), but in the case of ignorant farmers.

who are entrusted with the nation's most basic industry, this factor accounts for much. Without pride in the straightness of his furrows, in the uprightness of corn rows, in the cleanliness of his fields, in the high productivity of his crops, in the fine appearance of his cattle and in general upkeep of his farms, it may, well nigh, become impossible for him to infuse that zeal in his operations and that enthusiasm in his work which are so essential for his successful farming. An exceedingly wholesome motive, it not only gives a great personal satisfaction, but results also in increasing agricultural production, and what is more important, from the point of view of rural economy, it is very effective in maintaining the appearance of the countryside. We may point out, therefore, that the arduous and odd jobs in agriculture and the strenuous work incidental to it, can only be made pleasant if those doing it feel an element of pride in their undertaking. This is a factor very significant and of some urgency in planning rural life. In the backward regions, especially, progress becomes impossible and all efforts at progress nullified, if pride in agricultural work is not enthused properly.

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Independence Closely akin to the above, is the element of *independence* inherent in agricultural undertakings. These pursuits are usually considered to be rather independent, that is why the farmers mostly belong to the peasant proprietor category who are characterised by an independent outlook on life. Though dependent upon the freaks of nature, yet agriculture is undeniably an independent industry in the sense that the man behind the plough cares for none and is the master of all he surveys. As argued above, all forms of industrial and commercial activity emanate from the field of agriculture. While the industrialist may feel the pinch of raw material shortages and thus be influenced by the complexion of their productivity, the agriculturist is in no way, so direly dependent on him. Arguing in a similar fashion we may say that while the trader and the businessman depend upon agriculture, the farmer remains uninfluenced by commercial operations. This is not to assert that there is a complete divorce between agricultural activity and other forms of human initiative, but the foregoing hypothesis merely stresses the fact of farming being more independent than all other callings. Coming to the wider canvas of rural life, we discover that most of these activities have been, and still are, highly self-sufficient. That this self-sufficiency has persisted through ages is another proof of agriculture being independent of other occupations. The independence of the rural communities has been, in no insignificant manner, responsible for cultivating among them a spirit of independence. The conclusion that peasants are idealistically inclined to be of a freedom loving character, seems to be irresistible. It is very well known, and widely too, that the spirit

of independence is powerful enough to attract people to agricultural pursuits.

Ease of Farming. Ease of farm undertakings is another important aspect of the same issue. The farmers are by reasons of heredity, tied to the soil. A farmer's son usually takes to his parental calling, unless forced by circumstances, to adopt another line. The work he learns as an apprentice though not formally initiated into his job; he learns it while a growing adolescent. There need be no special schooling for him excepting what he gathers while at his father's farms. Nor does he require any special certificates or diplomas or degrees to enable him to join the profession. He does not need to undergo any special procedure before he can be installed in office. Easy it is to be a farmer if that has been the family line. This may also be conceived of as an ideal condition obtaining only in agriculture, as distinguished from other pursuits. Another aspect of the problem, that invites our attention, is that the agricultural operations are not so dull or monotonous as the industrial or commercial routine is. Fatigue being mainly a function of monotonous work, the farming labour is not so fatiguing as other jobs are. Even the odd jobs on the farms are interesting, creative and consistent with each other. This statement is unexceptional even in the backward communities. Whatever is creative is easy. To sum up, the fact of ease of these operations is an ideal condition in agriculture.

Habit. Habit also plays a significant role in human affairs. Habit is the substitute for conscious efforts. The very fact that things are done by force of habit is sufficient to make them an important part of life. Simply because one does not strain when doing farming odds, one continues to discharge one's duties in the same manner, year after year. This often continues long after the farmer has acquired a competence in his work. Habits should be progressive. If progressive, the peasant also becomes correspondingly more efficient. Usually farming by habit lags behind the modern technique and may not come to the mark. The reason is simple though psychological; the man with conscious motives would always be far ahead of one who work by habit. Admittedly, therefore, all those jobs, which can be discharged by habit, are more attractive than those requiring conscious efforts. In the light of this, we may generalise that farming by habit may as well become an ideal for the agriculturist. True, the tempo of agricultural progress slows down by habitual farming. Still, the role of habit is pronounced.

Joy and Leisure. Life would be very dull and dispirited if devoid of leisure. Happiness is the goal of human living; leisure is the means to that end. The reward of work is not output

but enjoyment. It is really exhilarating to be able to take some time off from the dull routine of life, for that lends a charm to it.

SUMMARY AND CONCLUSIONS

Apparently economic motivation is of a limited character, but man does not live by economics alone. In rural life, especially, living is integrated. Non-economic motives dominate the villager, who is less burdened with the complexities of life than the townsman. Village life affords greater opportunities for enjoyment and leisure than the humdrum of city life. Many a businessman and industrialist retires to the country to spend time in rest and leisure. Farming is a mode of life, rather than a professional pursuit; and therefore less divorced from enjoyment and leisure than parallel professions. We may, therefore, generalise that rural environment is more human and provides greater opportunities for leisure, this is an important consideration.

AGRICULTURE IN MODERN WORLD

Farming in Modern Economy—Crucial Influences of Agriculture : The Food and the Raw Materials Aspect—Trade and Commerce Basis of General Prosperity. Impact of Prosperity and Progress—Fewer Farmers and More Labourers : Greater Commercialisation and Mechanisation. The F. A. O.—Machinery and Administration : Achievements. Wars and Agriculture—Increased Demand for Food and Agricultural Products : Stockpiling and Agriculture : Wars and After : Rural Movements : Conscious Countrymen : Expansion Movements. Conclusions.

It may be pertinent at this stage to stress the importance of farming in modern society. The very fact that farming remains the principal occupation of more than two-thirds of the world's population, is by itself quite a significant one. It is the fact that even though industrial advancement has proceeded at a very rapid rate, agriculture still remains an important occupation for large number of people, has important lessons for the student. Even a casual observer will not fail to notice the revival of agriculture in several advanced countries. Greater and greater emphasis is being placed on rational agricultural policies, suitable to the requirements of different countries. Agricultural reconstruction received special impetus in the international field by the establishment of the Food and Agricultural Organisation (F. A. O.) under the aegis of the U. N. O. In short, the crucial importance of agriculture, both in its national and international aspect is recognised.

Food and Raw Material Aspect. For centuries man was consciously dependent upon food and his main occupation was to get food. It started first in root-grubbing and fruit-picking stages in the evolution of mankind, culminating in the present-day canning and tinning processes of the agricultural products. We may not be so conscious of our dependence of food, but the fact remains that we require at least three thousand calories for mere sustenance. Not food alone, but clothing too, is important for human existence. Food and clothing both have agricultural origins. Agriculture is, therefore, very vital to the existence man. It is easy to prove therefore, in the context of this analysis, the farmers come first. Still another necessary of life without which man may not be able to live, is shelter. This is true, as much of the caveman as of his modern successor. And a very important material for the construction of houses, and for the provision of furniture is timber, which again is supplied from forests, which are included in the study of agriculture. Food, animal and vegetarian ; clothing, silken, woollen and cotton ; and shelter, primitive or modernised, all are the products of agriculture, which remains the most important supplier of food, clothing and shelter. But agriculture goes further than this. Most of the raw materials,

like jute, sugarcane, wheat, indigo and tea are farm products. Other raw materials, too, like cotton, fibres, wool, hides, etc., are supplied by the farms. Agriculture, therefore, is the supplier of raw materials for most of the industrial nations, like Britain and Japan who in order to keep the factories running offer many concessions to the raw material producing countries in exchange for their products. The raw material situation assumes an important place, when war begins and it is an accepted fact that she wins who has the largest raw material supplies. It is because of this that agricultural protection has been practised in the industrialised countries, they want to assure themselves of regular raw material supplies. Raw materials are as necessary as peace-time industries as for war-time operations. Conceding this fact, we have to admit that farming, the source of raw material is equally important.

Trade and Commerce In the modern society, trade and commerce have come to occupy an important place. A greater significance attaches to these tertiary pursuits. These are again dependent upon agriculture. A larger percentage of world's carrying trade, devotes itself to the transport of foodstuffs in the raw materials, all agricultural products. Admitting for the sake of argument, that a larger part of world commerce is between advanced countries alone and that this far outweighs, the quantum of trade in the rest of the world, we should be conscious of the fact that we have, in this comprehensive analysis, completely ignored the domestic trading as it takes shape in the various regions. Were we to take stock of the over-all position, we shall soon be convinced that agricultural products form the largest part of all exchanging. The channels of war, trade and commerce, would surely run dry, if agricultural products were excluded from marketing operations in the countryside, at the urban level, in the regional and national exchanges, and above all in the world markets, timber, fisheries, meat, cereals or fibres, are what form the basis of trade and commerce of the world as a whole.

Basis of Prosperity It may be stated then that farm prosperity is the basis of general prosperity. Under certain circumstances, prosperity may really rise or fall with the ups and downs of agriculture. The example of Pakistan may be cited. If and when, crops are good and at the same time prices and demands for cereals, cotton and jute, strong, the Pakistan people in general are prosperous. Similarly when the demands for their goods is weak and price low the whole set up of business, trade and commerce gets depressed and employment slack. But this is not to say that agricultural conditions form the basis of general prosperity, generally speaking. The case of an isolated country may be taken as exceptional. We have still to prove that the world as a whole will benefit if agriculture becomes prosperous. The industrial

Fewer Farmers and more Labourers The first thing that strikes us is, that with economic progress the number of farmers generally declines. In a country where industry and transport have attained maturity, agriculture always decreases in relation to other industries. It takes relatively smaller and smaller number of people to provide all the agricultural produce, required. And this is true of all countries alike. The cause may be two-fold, this may be due to the modernisation of agriculture and or because of increased absorption of workers in other fields of expanding activities. Farm equipment, of which we shall speak later in details, enables the farmers to be more efficient. A tractor accomplishes several times as much as a primitive farmer could do. Mechanised agriculture needs far smaller number of people for agricultural operation than unscientific agriculture. As long as this is true, so long the number of men engaged in agriculture will decline. The most important impact of progress, from the economic point of view, is that with more prosperous agriculture, we shall have fewer farmers. Talking of the other factor that with progress there is a larger absorption of labour in fields other than rural, we discover that this is quite correct. The demand for labour from non agriculture pursuits, intensifies with general progress. Industries expand, trade and commerce cover a larger field and transportation operates on a larger area. The one consequence is that there is a keener demand for labour. These thriving industries can afford to pay wage rates higher than are prevalent in agriculture. Consequently a large number of people flock to these industries, decimating the farming population. The axiom, more prosperity less farmer, thus holds true from all points of view in Economics.

Mechanisation As pointed out above, prosperity and progress are usually in accompaniment with mechanisation. Mechanisation has spread to all fields of business activities. From mechanisation flow several important repercussions for the agriculturist, as noted in an earlier chapter, the complexion of agriculture has changed with the advent of mechanisation. We studied in that chapter how time-saving devices and gadgets have brought about change in agricultural operations. An overhauling has taken place. Confining our attention only to the economic implications of the same, we studied in the above paragraph, how a large force is released from agriculture to work in the secondary and tertiary industries. Mechanisation has also had compelling effect on the scale of farming, larger scale had to be practised in order to enable the farmer to mechanise. Again, we must not ignore repercussions in the field of cultivation. Different types of stalks and stems are grown to facilitate mechanical operations. Expensive machines and costly repairs and rich maintenance can hardly be afforded by an

average farmer within his own means. Therefore, socialisation and co-operation have received an impetus in the field of agriculture. Organisational and structural changes have, therefore, taken place in the sphere of agriculture, mainly due to the increased use of mechanised implements in modern farming.

Commercialisation. Commercialisation of agriculture has been taking place in recent times on a scale larger than ever before. From subsistence farming commercialised farming is a step pregnant with far-reaching consequences in the economic sector. Under a subsistence system, the farmer is mainly concerned with producing the food and the foodstuffs. This aspect of production has the highest priority under primitive and mediaeval farming. Not that this means that other agricultural products were unknown or were not cultivated but that the quantum of their output in the pre-modern days was much lower than it is now. Apart from the fact that agricultural products including foodstuff, these days are undergoing increased processes and thus fast becoming commercialised, we find greater attention is being devoted to cropping fibres, wheat, indigo, etc., and to rearing silk-worms and sheep than ever before. Agricultural production has become commercialised in a very pronounced fashion. This fact becomes more glaring, when we take into consideration the economic and commercial calculations which the modern farmers and the agricultural planners make before launching on such enterprises. Admittedly, agricultural commercialisation has far-reaching implications and repercussions.

THE F. A. O.

We should note here the world trend in agriculture for that study would give us an insight into the working and place of agriculture in Modern Economy. At the top is the U.N.O. or the United Nations Organisation which is interested in world progress and world peace. It has certain specialised agencies and the Food and Agricultural Organisation is the most important one, entrusted with the work of rehabilitation, reconstruction and revitalisation of world agriculture. The organisation has been set up to find a practical solution to man's most urgent and pressing problem, the food problem. Another fundamental fact that it seeks to tackle is the welfare of two-thirds of the world's population, *i.e.* farmers, fishermen and foresters who produce the world's food resources. It now recognised that a larger population has always been undernourished and that a surplus of food has never been in existence, taking the world as whole. Also, it is a notorious fact that these farmers and fishermen are the most neglected people and most poverty-stricken, in fact, so distressed that most of them lead a sub-human existence. The problem of improving their standard of living is coincidental with that of increasing the food production and raising man's

nutritional level. It was also realised that none of these problems could be solved piecemeal nor could they be attacked in isolation, by single institutions or even by single nations. That these were very intimately integrated problems and therefore had to be tackled on all fronts, and by all the nations, was the further realisation that dawned upon world statesmen. The problem facing the world peasantry is a human problem and one of great magnitude. It concerns the welfare of mankind in general, hence, could no longer be ignored. No durable peace could be built on foundations other than that of a contented peasantry. The leaders of the world, therefore, acting in complete unanimity set up the F. A. O. This organisation was the result of the conference held at Hotsprings in May, 1943, forty-four nations pledged themselves to work together for the elimination of want to ensure permanent peace. It was conceded that about two-thirds of the human race was undernourished, that their nutritional levels must be raised in the interest of humanity and peace, and that more food could be produced by adopting the best methods of agricultural technique, that under-employment and unemployment could be wiped out by adopting better methods of distribution and, above all, that nations must act together for the achievement of these ends. The F. A. O. was born in Quebec in October, 1945.

Machinery and Administration The Food and Agricultural Organisation was the first of the specialised agencies of the U. N. O., created after the war. At present more than sixty countries are members of this world body. Its technical divisions cover Agriculture, Fisheries, Nutrition, Forestry, Rural Welfare, Distribution, Production and Statistics. It has also Advisory Services on Soil Erosion, Irrigation, Engineering, Insect Infestation, Artificial Insemination, Farm Machinery, Fertilizers and Manures. Information and advice on these matters is furnished to national agencies and the governments concerned. Its temporary headquarters are at Washington but regional offices have been set up at Rome, Cairo and Bangkok, for Europe, the Middle East and Asia, respectively. And an information specialist has also been posted in New Delhi to provide information for Asia and the Far East. The World Organisation is run by a Conference at which each member can vote. At its annual meeting, the conference reviews the world situation in regard to Food, Forestry and Fisheries in particular, and Agriculture, Live-stock and Rural Welfare in general. The Conferences are held at different places in the world in order that the popular interest in its activities may be roused. Between the sessions, the Council (The World Food Council) acts for the general Conference. This Council meets at least twice a year and its thirteen members keep a vigilant eye on the food prices and trends of production. The Council receives reports and frames policies in

case of both surpluses and shortages and renders advice accordingly. It ensures that there is an equitable distribution of the foodstuffs at reasonable prices. Since 1949, its Committee on Commodity Problems tackles the jobs of food deficits and food surplus centres, to plan for the movement of these surpluses on special terms. It works with the United Nations Organisation through the Economic and Social Council and effects intimate collaboration with the Economic Commission for Europe, the Economic Commission for Asia and the Far East and the Economic Commission for Latin America. In short, the F. A. O. seeks to achieve, "let there be bread," its motto, by helping nations raise living standards of their people, improve their nutritional levels, making the production and distribution of all food and agricultural products better and more efficient, achieve the welfare of the rural people, and, above all, widen the employment opportunities for them. At the helm of affairs, is the Director-General, appointed by the conference; he directs the work and is assisted by a stock of specialists and experts.

Achievements. Examining the working of the F. A. O., we find that it has neither funds nor authority, nor even food nor fertilizers, nor machinery, nor staff nor laboratories. But it employs indirect means to secure its ends. It collects data on Food and Agriculture and publishes the same in its Statistical Year Books and other such compilation that it brings out. Secondly, it gives advice to member governments on the best ways of accelerating food production, improving its distribution and providing work for all. Experts may be sent to work with member governments. Special conferences may be convened to discuss specialised problems e.g., International Conference on Timber in 1947. Regional meetings may also be held. Or the Organisation may set up experimentation stations at certain important regional centres. Thirdly, it renders technical assistance to certain regions or countries which may stand in need of the same, e.g. the problem of child-feeding was studied by its experts in Greece in 1946, and a report and a plan for development submitted to the Government concerned. Studies may also be undertaken at the request of the governments or as voluntary effort from the F. A. O. In short, the working of this Organisation covers a large canvas and relates to almost all the aspect of the peasants' life and nations' agriculture. Problems are studied both at the international level and at the regional points so as to attack them in a very realistic manner. That is why the F. A. O. is responsible for having made a useful contribution to the world's agricultural economy in recent years. A stock of goods, of outstanding varieties has been set up and out of this samples are distributed for experimental purposes and record kept of the productive performance of the same. Disease-resistant varieties, if discovered and found successful, in a particular region, are cultured there. There is then an international traffic in seeds and

plants which are being constantly exchanged. Hybridization has also been undertaken at various research stations and the performance records of these hybrid varieties carefully watched. The Permanent Forestry and Forest Products Working Party, created in 1951, is tackling the problems of providing fuel wood for the regions in need of it, and expanding timber and dealing it with allied problems. The Indo Pacific Fisheries Council was set up with the object of increasing the food supply from the sea, with special reference to this region, while the Mediterranean Fisheries Council is studying similar problems for that region. Efficient vaccines to control cattle epidemics and diseases have been perfected and this knowledge is now shared by the F A O at its regular meetings, e.g. in a recent meeting held at Nairobi. The Nutrition Committee worked out the problems of improving diet, while cattle breeders were brought together at Lucknow and statisticians are being trained at New Delhi, under the F A O.

Its Contribution The above rapid survey outlines, in brief, the manifold activities of this world organisation. The fact is that the F A O contribution to the world of agriculture is quite significant. Probably, this type of activity, which brings the world's farmers closer and in more intimate contact with each other may be potent enough to avert wars by impressing upon them the need for international amity, interdependence and co-operation. Food being the most basic and the most important of all the necessities for man, any interdependence of nations in this sphere would assure the elimination of future warfare. And once man realises the good of being properly fed and well nourished he would very much hesitate to go to war, especially when the experience of two global conflicts within one generation has brought about starvation, an inevitable result of such diabolical undertakings. It is to be hoped, therefore, that the F A O will be a strong weapon to prevent future warfare, and ensure durable peace. From the above account, it would also be clear that the F A O has an important constructive side to its activities and objectives.

WARS AND AGRICULTURE

In war time, too, agriculture assumes a very important role. And since wars are as normal as other human activities, it may be instructive to assess the role of agriculture during periods of war. Agriculture is so essential a base for the "ordinary business of man", and it is still more important for the successful operation of hostilities. In the absence of a strong defence force, no wars could be fought, and it is from the ranks of the farmers that the armed forces are recruited. The peasantry provides the best and the most zealous soldiers to guard the interests of the nation. Thus basically true, agriculture is quite essential even for the continuation, and successful termination of hostilities.

Increased Demand for Food and Raw Materials. This significant role is made still more significant by the fact that even for the operation of the war, it is necessary to have sufficient stocks of raw materials, and what is most important, food. Turning our attention to the latter first, we find that without food a belligerent nation may not be able to fight to a finish. Not only must the soldiers be assured of sufficient and continuous supplies of food, but also the civilians get food in order that they are not demoralized but are able to hold out. Modern Warfare is total warfare and everybody must be able to make his contribution to the national war effort. The Nation's morale must not be permitted to be shattered at any cost. It is pointed out that during state of war, the nation must have ample supplies of food, not only to meet the usual needs, as calculated at the normal rate, but also the emergent requirements, e.g., in case the enemy is able to destroy its foodstuffs. The need for over-surplus stocks can hardly be over-emphasised. Mere food self-sufficiency may not be enough for the allies may also be dependent upon each other. And the food reserves may have to be shared; these reserves must be expansive enough to meet extraordinary requirements. Hence a sound food economy is not only an important pre-requisite to peace and planning, but also essential in times of total warfare, and other similar national disasters. It was a successful food blockade that brought Germany and the Axis powers to their knees. Again it was due to a similar crisis that there was a *Coup d'etat* in China. Food is verily an important factor in national and international relations and politics. A similar situation may be said to persist in the matter of other agricultural problems which serve as important raw materials for warfare. Jute, cotton, wheat, timber, rubber and other raw materials are examples. Truly has it been said that rubber and timber are determinants of a good system of transport in times of war. To the argument that synthetic projects have come in vogue and that this has considerably lessened the importance of the natural raw materials, it may be pointed out here that synthesisation has its limits and cannot be described as a cheap familiar process. That is why the natural grown products are still preferred to the synthetic ones. And even in the preparation of these synthetics, what we require as raw materials are natural products, though of some other variety; rayons could hardly be expected to substitute *in toto*, the cotton and silk textiles while synthetic rubber could not be cheaply produced. Inevitably, therefore, are we driven to the conclusion that raw materials are indispensable.

Stockpiling and Agriculture. Even before the war starts, stockpiling begins. We have had recent evidence of it in the case of the Korean War when the Americans began to accumulate the stocks of raw materials as they expected the war to prolong. Stock piling

is usually in respect of the agricultural products. The reason is that the supply position in regard to these is rather rigid and inelastic. At a time of war mongering, a scramble for agricultural products starts. This may have sometimes a toning influence on the agricultural activity and a stimulating effect on rural conditions. One is reminded of the recovery which started off, in 1936-37, as a result of re-armament activity, leading to stock piling by the Axis Powers. Similarly the post war recession in agricultural prices was arrested by the American bid for raw materials. It is necessary to accumulate and to pile up these products in anticipation of a threatened outbreak of hostilities or under war scare, because it always takes time to complete the cycle of agricultural production. Such a time lag does not necessarily exist in the case of manufactured products whose production is very much controlled. Agriculture thus assumes a newer importance in this context. Essential it becomes to have agricultural supplies to serve as a feeder for manufacturing goods which may be indirectly demanded even before the country takes measures to defend itself against the external aggression. Looked at from this angle agriculture proves to be the very foundation stone of national defence strategy. This is because of its peculiar character of inelastic supply, seasonal nature, inherent time lag and greater requirements in respect of land and other natural agents of production. Whatever the reason for this state of affairs it must be conceded that even during preparations for war, agriculture remains supreme and cannot be neglected excepting at a high cost.

Wars and After When actual warfare goes apace the Allies pool together their agricultural resources. They estimate the productive potential in respect of raw materials and food and pool these resources in order to re-distribute and re-allot them according to the war needs. This is not to say that the industrial goods are put at a discount and are not taken into consideration when calculating the war requirements of the belligerents but the point that needs be emphasised is that the position in regard to raw materials has to be reviewed oftener because of their significant role in the supply of munitions. Modern warfare being total warfare, shortages in one sector reflect adversely on all other sectors. The strength of the chain being its weakest link, the warring nations are judged by their weaker associates. Weakness in this respect means shortages in relation to the supply situation. During the last war, too, the allies set up regional supply bases, in order to strengthen the different theatres of war. The pooling of agricultural resources does not end with the signing of peace, but in fact takes a newer turn with a reinvigorated colour during the times of post war rehabilitation and demobilisation. Their resources are now pooled afresh in order that the food and other similar shortages may be combated and the switch-over

from a war economy to peace conditions smoothly effected. As adverted to above, the F. A. O. takes annual stock of the world's food production and proceeds with the allotment of quotas in respect of wheat and other cereals to various suffering nations. For effective planning, too, this pooling is considered essential. We can assert that after surveying the role that agriculture plays in peace, planning or war, and the place that farming occupies, even in the present industrialised economies of the world, can hardly be over-emphasised. All-round recognition has been accorded to the fact that agricultural resources do have an effective say in moulding both the national and the world economies. Wars are more less inevitable and cause huge waste of agricultural productivity, by the scorched earth policy followed by the retreating forces and the damage wrought by the advancing armies. Advisable it is, therefore, that agricultural production be carefully planned in advance, in order to provide a protection against all emergencies foreseen or unforeseen.

Rural Movements This survey would remain incomplete if we did not refer to the rural movements so widely prevalent in the West. In the U. S. A., particularly, large number of people have been moving towards the countryside in search of work which they could not get in the urban areas. This is one aspect of these movements. The other one is that nearly in all the other countries, greater attention, is being paid to improving and beautifying the countryside. This is in order to attract larger number of people to settle down in the rural regions and to relieve the congestion in the cities. This is the second aspect of the problem. Town life, especially in the West, has become not a little too competitive and rather hard, hence most people prefer to settle down on a piece of land rather than wander about in search of food and work. Mere possession of farm land assures them at least a place to stay (that may not be available in the city slums) and a morsel of food for themselves and their dependants. These "squatters", as they are called, have created a problem in the industrialised regions and this problem cannot be dismissed as being of no importance. Regarding the other section, who move to the countryside in search of peace and solitude, we may point out that these do-wells are quite a significant section, not because of their numbers but because of their influence over the administration and their ability to get the countryside improved. As a result of both these streams of people flowing into the rural areas, the attention of the administrator and the planner is rivetted to the countryside, increasingly, for obvious reasons. Still another aspect of the same movement is the *land hunger* which is growing intenser among the farmers. Great numbers of them are anxious to own land both in the advanced and backward countries. Land is in great demand where it is scarce, simply because it is a source of livelihood. China and India are outstanding examples. In these countries the

employment opportunities are few, especially for those inhabiting the rural regions. Pressure of population is growing. Fragmentation and sub-division of holdings is rapidly shrinking the size of the farming unit. Tenants are multiplying in numbers. Consequently land carries with it a certain amount of prestige and social standing and, therefore, there is a competitive and keen demand for it. On the other hand, the pace of reclamation or addition to the existing amount of land is painfully slow. This is what is responsible for intensifying land hunger among the rural people. It is notorious that in India there is an insatiable hunger for land among the hard pressed, illiterate and poverty-stricken rural masses. Similarly even in the West, land hunger is now coming to the fore. Instances are not wanting when tenants have offered to pay more than they could really afford for a certain piece of land. This was due to expectation that land values would rise, or because of speculative forces operating on land. Another factor has been the trend in the sphere of industrialisation. Nascent industries have preferred to settle down in the countryside. Dispersal of industry has been encouraged by the State also on strategic grounds. Therefore a spurt of land prices. Stress on the provision of more recreational facilities has provided an impetus to the demand for land. In the light of all these considerations, there is an accentuated demand for land.

Conscious Countrymen Added to the above is the factor of growing consciousness among the country people. The farmers in all the countries are no longer as ignorant, as superstitious or as conservative as they were some time back. They are now politically awake and socially conscious of their rights and privileges. This is an important aspect of the rural movement because the farmer today would no longer accept, in a passive manner, what may be determined for him by the powers that be. He refuses to be only a spectator to the political and social forces around him. He is not so easily influenced either by the agitator or by the administrator. Having been brought up in an independent atmosphere and having had close contact with mother Nature, the modern farmer is less likely to be mentally unbalanced than his city compatriot. With a traditional sense of confidence that he has enough to eat and a place to sleep, he (while sticking to his profession), plays an increasingly important role in national affairs. Country life provides an opportunity to meditate, and therefore, a chance to determine a philosophy. It teaches responsibility and obedience to nature and laws of life. Hence this aspect of rural movements gains a very significant place in modern world economy and can be properly weighed, for it studies non-economic aspects of the peasants' attitude. Talking of non-economic facts we find that those reared on a farm are among the most reluctant to change. Usually characterized by lack of

social contacts, and a fear of the unknown, the farmers tend to stay put. Isolation from other kinds of work keeps them mentally tied to the occupation of farming. Also mental inertia gets hold of the peasant-boy; he farms because he is a tiller. Fourthly, a peasant saturated with an independence of spirit resents being bossed. Lastly, having been brought up in certain typical environments he dreams new associations. Thus farmers inherit farming and are enormously proud of the same. To sum up, it may be safe to say that one gets started on this business without much capital or training or preparation. This fact intimately influences the farmer's attitude and relates itself to their consciousness of being tillers of the soil: that is why farmers remain farmers.

Extension Movements. Another important movement that may be said to have originated recently is the Extension Movement. Having recognised the importance of agriculture in an industrial structure, progressive states have initiated movements to modernise agriculture. Spreading out from the U. S. A., this movement has enveloped several countries. Suffice it to say here, that it aims at bringing the farmer in closer contact with the march of science in regard to better farming and better living in the rural sphere. The experts are sent even to far-flung places to talk to him on the latest that science has to offer. This movement has been a success, being over all in its operation. Village life is being thus corrected and brought into its proper perspective *vis-a-vis* modern society. In simpler societies, the extension programme must needs be wider and broader in action while everywhere it is co-operative. In short, it renovates and overhauls the peasantry putting them on a sounder and a firmer basis. It is a planned and systematic approach to rural problems.

CONCLUSION

A few concluding observations are in order here. From the above analysis of world agricultural economy, we find that though the move towards industrialisation is rapid and being consciously planned, agriculture still retains its important place. Industrial countries are reviving agriculture while the agricultural economies are revitalising their rural structure. The working of the F. A. O. was examined as a world-wide attempt to put agriculture on a sounder and a firmer basis. The rural movements reveal a very high degree of peasant consciousness,abetted by enlightened states to raise the standards of living and to widen their outlook. In this age of rapid scientific progress, we could not have afforded to ignore the study of the consequences of prosperity and progress on agriculture, if only to gauge the impact of all-round development on it. Modern economy is

getting more and more closely knit and better integrated than ever before, for the march towards "one world" is rapid, both in the political and the economic spheres. This is also an essential pre-requisite to surer and steadier peace. The irresistible conclusion appears to be that in modern society agriculture is re-discovering its honoured place, through the interplay of several forces. This statement should not be taken to imply that national economies have a less important role to play, in the next chapter we assess the place of agriculture in national economic system and examine national agriculture in its variegated aspects.

CHAPTER VII

NATIONAL AGRICULTURE

Nation and the World—Backward and Advanced Economies: Underdeveloped Regions: Transitional Economies: Advanced Systems: Peace and National Agriculture: Food Distribution: Science, Progress and Agriculture: Sharing Knowledge. National Policies—Economic Self-sufficiency: Diversification and Control: Balanced Economy—Balance in Planning: Agriculture and Employment: Diversification: Co-ordination: Competition and Control. National Agriculture—Co-operation and Collectivisation: National outlook: National Agriculture—National Outlook: Co-operation and Collectivization: Defence: Trade and Tariffs: Total Output and Planning. Society and the Individual—Conflicts in the Agricultural Sphere: Total and Individual Output: Maximum Productivity and Proper Distribution of Agricultural Products: Place of the Individual Farmer. Summary and Conclusions.

NATION AND THE WORLD

In the world polity, Nation is an important constituent. Without setting out to define the terms "nation" and "state" from academic angle, we may concede that the nation is homogeneous group with a common mode of living, and an accepted ideal. In the last chapter, we examined the place of agriculture in the world economy, and tried to assess its position therein. In this chapter we appreciate the situation from the national angle. The world is after all composed of nations, though through international agencies the super-national interests do find an important place in national policies. The fact that in the event of a conflict between the national and the international interests, it is the former that are recognised and the national policies supervene over the directive from the international agencies, suggests that the time is not yet ripe for the world forces to gather so much momentum and become so powerful as to sweep away before them all narrow national vested interests. One world is not yet: it is only an ideal far-off, looming in the distant horizon. It is proper, therefore, to take stock of the situation even in this theoretical dissertation. From the purely national point of view, it will benefit us in that it will provide us with an insight into the working and the problems that face agriculture.

Backward and Advanced Economies. Crudely speaking, the world may be divided into two regions, the backward and the advanced economies. The under-developed regions have problems of a typical character. Still, their important role has to be recognised, if only because of the fact that both in area and population, these regions far outweigh the advanced ones. Most of the progressive countries are industrialised, while all the underdeveloped regions are predominantly rural. This also accounts for the comparative importance

that attaches to the analysis of the backward economies in any discussion of agricultural economics. The economic outlook in the underdeveloped regions is a primitive one. It is not our purpose here to study the detailed structure and nature of a primitive economy. Still the broad features may be noted. From the agricultural point of view, farming is on a subsistence basis. Anthropologists tell us that most Indian tribes do not make any conscious effort at farming; they depend upon the bounty of nature to provide them with food and fuel. Probably, it is because of the luxuriant and "natural" environment that has been responsible for that outlook of theirs. Agriculture, as understood in the modern economic parlance, does not thrive among these people. The problems of Agricultural Economics do not arise. In the light of these facts we may ignore these economies in this analysis, for they do have not any agricultural problems in the modern sense, nor have their economic problems any significance in the daily parlance. This analysis precludes them.

Underdeveloped Regions By the term "underdeveloped" regions, we refer to those regions which make conscious efforts at cultivation undertaken by their people. Among such countries may be included the South East Asian regions and the Middle Eastern economies which are predominantly agricultural and have the usual features of that economic structure. Motives and incentives have their economic significance, while economic activity, as commonly understood, has a place of prominence. There are, however, certain distinctive traits. Instead of competition, custom prevails largely in the agricultural regions. Instead of all transactions taking place through the medium of money, it is a *barter economy*. Again the social structure is characterised by caste and other similar considerations. Also noticeable is the abundantly rural character of these communities. And lastly, agriculture is still mainly a mode of living rather than an economic undertaking for the purpose of making a profit. Mainly on a subsistence scale, farming is neither modernised nor mechanised. Consequently, productivity is usually low and earnings very meagre. Economic incentives, though they may operate, are quite impotent of any remarkable achievement. The farmer lives in his shell, refusing to step out except when compelled by strong and powerful attractions, provided by the state or the planning authority.

Transitional Economies Between these underdeveloped and the advanced economies stand regions that are in the transitional stage of economic development. These countries, amongst which India occupies an important place, have economic issues of a very typically distinctive character. They are not so backward as to be labelled "underdeveloped", nor are they so industrialised as to be considered "advanced". Predominantly still agrarian, they are on the road to industrialisation and balanced economic structure. Their people have attracted

understanding among the nations of the world, because of realisation that any country might any day stand in need of imported food. International dependence has therefore, been firmly founded. So strong have the foundations been that in spite of the cold war getting hotter and hotter, open warfare has remained only a remote possibility. With the extension of this type of interdependence in other spheres, it may be expected that the foundations of durable peace may be permanently laid. International co-operation does originate from the sphere of food and agriculture. Self-sufficiency only remains an ideal for most of the nations of the world. We can very well imagine that even in other spheres of agricultural production, nations are dependent upon one another. Suffice it to stress that agriculture provides a base for international amity and understanding.

Scientific Progress and Agriculture Agricultural progress is mainly scientific progress. Scientific progress is not isolated. The fundamentals of science could hardly be locked up within the boundaries of a single country. Agricultural progress, a type of scientific progress, therefore, knows no national boundaries. Admittedly, national agricultural progress that may be the result of world progress in the field of agriculture, in turn, depends on the operation of the world forces in the technical sector. Agriculture being the keystone of general economic prosperity (taking the world as a whole), farmers' well-being is the bedrock on which to build the superstructure of higher national standard of living. A nation which marches ahead in isolation ends by remaining very backward, or at best by progressing in a very lopsided fashion. In the agricultural sector, in particular, availability or otherwise of certain factors, alone, may be potent enough to limit the field of experimentation. The evolution and hybridization of certain new varieties of seeds may be ruled out if only national resources and efforts are to be depended upon. Technical progress in the field of agriculture is international.

Sharing Knowledge Knowledge has to be pooled and constantly shared, before even testing it in the various fields of human activity. It may be a far cry to world prosperity if we were to depend upon purely national enterprises in this matter. That is why the F. A. O. is making serious efforts at pooling all the available scientific knowledge in the realm of agriculture and disseminating the same among the various countries. A nation's function is only to stimulate research, as far as possible, and exchange scientific information, with other nations at the international level. That way lies agricultural prosperity both at the national and international levels. This establishes a linkage between the world and the national forces and also emphasises the fact that isolated national progress is not possible of achievement.

NATIONAL POLICIES

National agricultural policies are more important from the point of view of this disrestation. National priorities in the field of planning need be examined. A study of the important factors in the evolution of national agriculture is indispensable to the study of rural economics, applied or theoretical. National policies are conditioned by some fundamental considerations as also some emergency factors, arising out of certain situations. An appreciation of the role of these in any system of national agriculture will repay study. A detailed examination of some of the more important and more universal issues will go far to enlighten us about the more relevant points raised in a study of this type. Our inquiry must, however, be limited to an examination of the more widely prevalent questions in a national system of agriculture. Questions of local and transitory significance will be precluded from our purview. In regard to priorities, too, we shall address ourselves to the more accepted ones and not bother about the topical, local and circumstantial issues. Policies are constantly influenced by certain targets in regard to priorities. Unwise, it would be to group together these simply because of the interrelation between them. Preferences in the field of planning, with special reference to agriculture, are fixed in view of certain national considerations. That means that most of them have only a local relevance. Still, there are quite a few accepted principles according to which national policies may be carved out. It is for this reason that a detailed study of agricultural policies and priorities is complementary.

Economic Self-sufficiency Foremost among the national policies is the target of *economic self-sufficiency*, and especially the emphasis laid on the realisation of food self-sufficiency. Economic self-sufficiency may be difficult of achievement but food must needs be assured to every citizen. Industrial potential and the agricultural resources may be at the exhaustion point already, as the case of the "advanced" nations bears out, or they may be in the very initial stages of exploitation, but without food for all, the other targets may not be possibly realised even in the distant date. Economic inefficiency may consequently grow among the semi-starved or the emaciated labour force, if they do not get the proper nourishment or are not assured of it. In order to mobilize the fullest economic effort, food insurance for a growing economy is the first pre-requisite. A good and overfull provision of food may indeed pave the way for economic self-sufficiency in view of the above argument. A well-nourished labour force is at once an asset and a credit to the nation. The above analysis need not be interpreted to imply that food self-sufficiency must be achieved at all costs, and all the national resources geared to that end but only to impress upon the reader the superlative importance of the

understanding among the nations of the world, because of realisation that any country might any day stand in need of imported food. International dependence has therefore, been firmly founded. So strong have the foundations been that in spite of the cold war getting hotter and hotter, open warfare has remained only a remote possibility. With the extension of this type of interdependence in other spheres, it may be expected that the foundations of durable peace may be permanently laid. International co-operation does originate from the sphere of food and agriculture. Self-sufficiency only remains an ideal for most of the nations of the world. We can very well imagine that even in other spheres of agricultural production, nations are dependent upon one another. Suffice it to stress that agriculture provides a base for international amity and understanding.

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NATIONAL POLICIES

National agricultural policies are more important from the point of view of this disrestation. National priorities in the field of planning need be examined. A study of the important factors in the evolution of national agriculture is indispensable to the study of rural economics, applied or theoretical. National policies are conditioned by some fundamental considerations as also some emergency factors, arising out of certain situations. An appreciation of the role of these in any system of national agriculture will repay study. A detailed examination of some of the more important and more universal issues will go far to enlighten us about the more relevant points raised in a study of this type. Our inquiry must, however, be limited to an examination of the more widely prevalent questions in a national system of agriculture. Questions of local and transitory significance will be precluded from our purview. In regard to priorities, too, we shall address ourselves to the more accepted ones and not bother about the topical, local and circumstantial issues. Policies are constantly influenced by certain targets in regard to priorities. Unwise, it would be to group together these simply because of the interrelation between them. Preferences in the field of planning, with special reference to agriculture, are fixed in view of certain national considerations. That means that most of them have only a local relevance. Still, there are quite a few accepted principles according to which national policies may be carved out. It is for this reason that a detailed study of agricultural policies and priorities is complementary.

Economic Self-sufficiency Foremost among the national policies is the target of *economic self-sufficiency*, and especially the emphasis laid on the realisation of food self-sufficiency. Economic self-sufficiency may be difficult of achievement but food must needs be assured to every citizen. Industrial potential and the agricultural resources may be at the exhaustion point already, as the case of the "advanced" nations bears out, or they may be in the very initial stages of exploitation, but without food for all, the other targets may not be possibly realised even in the distant date. Economic inefficiency may consequently grow among the semi-starved or the emaciated labour force, if they do not get the proper nourishment or are not assured of it. In order to mobilize the fullest economic effort, food insurance for a growing economy is the first pre-requisite. A good and overfull provision of food may indeed pave the way for economic self-sufficiency in view of the above argument. A well-nourished labour force is at once an asset and a credit to the nation. The above analysis need not be interpreted to imply that food self-sufficiency must be achieved at all costs, and all the national resources geared to that end but only to impress upon the reader the superlative importance of the

food resources in the national economy. The national policy may, therefore, be directed to the fullest utilization of the present and potential resources in respect of food. What is aimed at is the balancing of the food economy to the population of the country. It is not only through the food sector that we can achieve the above purpose but also through population planning that we can make the adjustment. Following the thread of this argument we can detect a relationship between the general agricultural policy and the food policy. A correct adjustment, having been achieved in respect of food, the agricultural plans could proceed. This has been the experience in certain countries which experimented in the realm of planning. A solution of the food problem has enabled these nations to proceed ahead with their planning programmes.

Agricultural Progress General agricultural progress is the next priority in the system of economic planning. For agricultural progress, the essential pre-requisite is the correct estimate of the land resources available to the nation after their utilisation for the purposes of food growing and provision. This "surplus" land can now be diverted to the general agricultural purposes. Even under unplanned economies, the natural and instinctive provision among the populace is that of food. That is why subsistence farming usually is undertaken among the primitive and underdeveloped economies. Hence, the general practice that appears to be prevalent both among the advanced and the backward regions, is the utilization of only "surplus" land for the general farming purposes, only after the elementary food needs have been fully met. Food targets are the first and the foremost priorities in any system of national planning.

Diversification and Control In the sphere of economic progress, too, agricultural needs receive a special consideration. Agricultural produce is significantly regarded for integrated economic prosperity. And economic self-sufficiency could hardly be said to have been achieved without agricultural self-sufficiency. Agricultural raw materials are the base on which the industrial superstructure could be built up. In fact, as stated in an earlier chapter, the complexion of industry is mainly conditioned by the availability and supply of the raw materials. Agricultural self-sufficiency should not be taken to imply complete supplies of every type of agricultural products, but the fullest utilization of these resources consistent with national progress, and the needs thereof. It looks not a little absurd to expect that any country could afford to become totally self-sufficient in respect of all the different varieties of agricultural products, for that is physically impossible in view of the diversity of agricultural production, and the limited physical and geographical factors available in a single country. Our contention is that the agricultural bases must be as much

broadened as is humanly possible, before launching ambitious plans of national progress. In the underdeveloped regions, the truth of this is quite evident, in view of the consideration that in these countries, the fullest use of the agricultural resources has not been made and the problem shifts its emphasis to this aspect of the question. That also is covered by the study of agricultural economics. In the relatively advanced economies, the problems relate to the revival of agriculture. In what directions and of what types planning must proceed in the agricultural sphere is the issue before the state, and the planning authority. Some of the industrial activities are dependent on the imported stuff and thus do not have a stable and enduring base on which to build up. Hence, the issue of sustaining these "dependent industries" by means of the provision of raw materials from the agricultural sector assumes a new importance. By a renovation of their rural economies, these regions are provided against all emergencies, foreseen or unforeseen. That is why most European countries have, in the post-war period, undertaken a revival of agriculture. In short, agriculture must be strengthened before complete and over-all planning could be taken up in all seriousness. And economic self-sufficiency could hardly be envisaged without a fuller utilization of the existing agricultural resources in the country.

BALANCED ECONOMY

Self-sufficiency may be only a means to an end ; the end being a "balanced economy". A balanced economy is what may be described the recent fashion in economic policy-making. Self-sufficiency may be possible only at a heavy cost, the cost being reckoned in terms of diversion of the economic resources into channels, artificial and unconventional. This may also involve the authorities concerned in some sort of overhauling of the existent economic structure into some new channels. The experience of European nations, striving for economic self-sufficiency in the inter-war period, is a pointer to the above fact. Hence, the only useful aspect of the concept of economic self-sufficiency is the facet of "balanced" economy. The balance in the economic structure is also to be striven for, for the simple reason that this insulates the economy against the evil repercussions of agricultural and trade fluctuations. The other consideration is the possibility of securing wider employment for the people, though it would be best to regard this as a separate design behind balancing the economic structure. Diversification of economic activity so as to envelop and enlist all types of present and potential effort both on the part of the people and the experts, is another goal incidental to economic self-sufficiency. The term "self-sufficiency" is to be given a wider interpretation.

Balance in Planning. Taking "balanced economy" first, we find that this is the target at which all the economies aim. To achieve

balance in the economy, the states strive to adopt several measures. In the advanced countries, it is usually agriculture that lags behind industry, and therefore, a spurt is given to it in order to bring about the desired balance. By balancing the economy is meant that the economic structure is so planned that none of the parts of the set up remain lopsided and that complete equilibrium is attained in respect of the distribution of resources and occupations so that in case of an emergency or crisis the economy is able to bear the strain well and that the labour force is also able to get absorbed therein. That is why the industrial countries lay a stress on the revival of agriculture and the retoning of the rural life. The transitional economies, too, plan their economic life in such a manner that the balance is achieved. That is why they emphasise the development of agriculture, for with the progress of agriculture in the several desired directions, the whole superstructure of the industrial activities will remain well balanced. The case of India may be cited. greater emphasis is laid on the first Five Year Plan on the upgrading of the rural life. In China, too, the stress is still on the *reconstruction and modernisation of her age-old and antiquated* system of farming. The place that agriculture occupies in the transitional economies is fairly prominent. In the underdeveloped systems, agriculture is in a state of chaos and has to be remodelled, before the industrial structure could be built up. In the case of the South East Asian countries, which are in a state of backwardness in the economic sphere, the emphasis is not so much on the building up of the industrial superstructure as on the renovation of the farming system, at least that is so in the case of these economies in the initial stages of their development. World experience in respect of planned economic development is that the first target in all planning is to bring about a balance in the economy, and further experience in this line has proved the super importance of the agricultural sector before the industrial base could be broadened. And this holds true of the backward, transitional and the advanced systems equally well.

Agriculture and Employment Considerations of employment are also paramount in determining the place of agriculture in a system of national economy. To agriculture is assigned an important place, because of the fact that it widens the scope of employment and also multiplies the employment opportunities. As a complement to the industrial structure, agriculture offers jobs of an outdoor nature, which the former does not. What is implied is that the rural life will afford jobs of all types, and to suit all tastes and aptitudes. From the purely employment point of view, supplementing the national industries confer on the nation the benefit of widening the scope for employees, as also that of enlarging the canvas on which the labour force could work. Job creation is assured and entirely new avenues of employment opened. This is no mean advantage,

both for the nation and the people. For an assured employment will go far not only to inspire confidence in the individual but also tend to stabilise the economy. In the regions which suffer from a greater pressure of population on land, the extent of under-employment and unemployment in the rural sector is often high, with the result that the countryside is often seething with discontent. In order to combat it, the authorities have to take some measures to fight out the twin evils and maladies of under-employment and unemployment, otherwise this will lead to a rapid increase in the crime rate and end in disruption. Agriculture is, therefore, remodelled and reconstructed so as to provide more employment to the ruralites. The unwanted intermediaries are eliminated, or at least their exploitation ended. Co-operative farming is introduced in order that the benefits of modernisation and mechanisation could be reaped by the humble and poor cultivators. In short, every method is tried to multiply the avenues of employment and work, especially in the rural sector. From the above analysis, it would be evident that agriculture occupies a very important place in the national economic structure not only because the target is to bring about a balanced economic structure but also in order to provide more employment.

Economic Diversification. Diversification of economic effort is still another point for the consideration of the policy-maker and the planner both in the industrial and the agricultural spheres. This is not to discount the benefits that specialisation confers on the economic system. But by diversification is implied the spreading out of the economic effort and enterprise into as many directions as is consistently possible with the special needs and requirements of the national economy. "Spreading out" in this context means locating the enterprises in widely scattered places so as to achieve locational balance, and also widening the scope of these enterprises in as many spheres as possible. Under a diversified economy, the country and its nationals do not merely concentrate on one type of activity, say industry or commerce or agriculture, but undertake all the three types. If the economic structure happens to be predominantly commercial and industrial the diversification drive will certainly lead to the over-emphasis being placed on the development of agriculture. But in case the economy is predominantly agricultural, the emphasis will naturally shift to industrial development. On deeper analysis, we find that the nature and complexion of this industrial development is conditioned by the availability of the raw materials, for in the initial stages of industrialisation, no economy could afford to run industries for which the raw material may have to be imported, that step will unduly strain the foreign exchange resources, and even deplete them : foreign exchange is urgently required to be conserved for the import of machinery and other capital goods. This means that the shape of agriculture will change accordingly and to suit the needs of the nascent industries.

For the expansion of the economic activity in the backward regions we need a remodelling of the agricultural system. The emphasis in this case, too, shifts once again to the rural structure. Diversification of economic activity, whether in the industrial or the agricultural communities, is only possible with the remodelling of agriculture.

The Co-ordination Effect Modern opinion tends to regard the twin sectors of agriculture and industry as complementary and not exclusive. It is not for the realisation of the objectives of balanced economy, fuller employment and diversification of economic life alone, that the co-ordination of agriculture and industry are desired, but for the wider interests of national economy. A proper integration of agriculture and industry would go far to benefit both. Agriculture, by supplying the raw materials that industry needs and by giving proper food to the industrial labour force, aids the output of the manufacturer very efficiently and also reduces the costs of the productive process. Incidentally, it also minimises the overdependence of the national industry on the foreign supplies, which may be cut off in times of warfare and other similar emergencies. Thus the industry, built on the basis of the agricultural supplies from the indigenous stock, is more stable and durable in its structure than the one that has been set up on the expectation of foreign supplies and imports, which are liable to cease at any time, in the event of a rupture. Industrialisation should be no longer a function of foreign policy and international relations. Similarly industry must supply the machines required for the farming operations. For an expanding economy, especially in the agricultural sector, more and more machines will be in demand for the cultivation processes. Industry will have to shoulder the responsibility of supplying these machines to the peasant so as to suit his requirement and also his pocket. Agricultural implements industries are growing all over the world. Mechanisation of agriculture has come to stay, and the demand for such implements is mounting daily even in the backward and the transitional economies. Implements manufacture alone will not do, more industries for the repair and the maintenance of these implements will have to be run in order that the implements remain useful and properly employed. Hence, the contribution of industry to the field of the agricultural activity is immense. Both these forms of human activity are interrelated in yet another manner, too. With the growing trend towards decentralisation and delocalisation of industry, the location of industry has also undergone a change of great significance to agriculture. Industry is now being ruralised. The trend towards ruralisation is due to high urban rents which have to be paid in the cities, and also because of the considerations of defence it is considered more strategic to disperse industries. It is not merely process of transplantation that is undertaken when dispersing industries to the rural areas but the fitting in of these industries

in the rural environment that assumes the first importance. The implication is that as a preparatory step to the delocalisation of industry, the rural areas must receive in larger quantities the benefits of extended communications and electrification, both of which will transform the very face of agriculture and influence considerably the very outlook of the peasant. As a result of the impact of the industrialisation growing in rural regions, the farmer will further broaden his vision, shed away his conservatism and take to a more progressive way of living. Also, agriculture may get more and more adapted to the needs of neighbouring industries and marketing problems not so complicated, for there will be a direct disposal of raw materials at the very godowns of the factory. Suffice it to say that this betrothal of agriculture and industry will prove advantageous to both.

Competitions and Control. All the modern economies are more or less controlled systems. The evils of free competition, which was one of the most important assumptions of the Classical School, having been recognised, all the efforts are now directed by the enlightened governments and welfare states to tone down the severity of the competitive society, and narrow the sphere of operation of competition. In older societies, custom prevailed, but with the growth of private capitalism and its extension to the industrial and commercial sectors, competition became the order of the day and the accepted form of economic transactions. True, prevalence of custom did result in the persistent exploitation of certain lower sections of the social set-up and the undue protection afforded to certain vested interests. But there was the bright side too, and that was the very great possibility of the public opinion turning against a certain custom and modifying and improving it to the advantage of the exploited ones. But under competition the only test is that of economic strength, or the state of free and unfettered competition cannot exist. The economically weaker sections of the society have no protection afforded to them except by the state or such other authority, competent and empowered to do so. Hence, in the evolution of economic policy-making, the curbing of free competition found its place of prestige, and has now been recognised as one of the significant planks of social policy and practice. One of the important constituents of welfare economics, control of competition has become an article of faith accepted by the planners and the administrators alike, in the interests of the general economy. Out of competition was born "combination." From the point of view of the individual, this was an evil worse than competition. For the state too, combinations offered a channel of activity too formidable for them to efficiently and effectively control and administer. Hence legislation was taken in hand to control and handle the "trusts" and such other forms of business organisation. It was only when the evils of competition began to sprout in the growth

and development of combines, pools, rings, monopolies, corners, trusts and cartels, that even the freest of the countries, wedded to *laissez faire*, started imposing some sort of control in this sphere U S A was the first to enact the anti trust laws, having been compelled to do so on account of the growing power and influence of these combinations. Once operative, the advantages of guiding controls and purposeful legislation in the sphere of business and economic activity were appreciated and won general applause and were soon put into operation in the more extensive fields of other types of economic activity. Every economy in the world is more or less conforming to the practice of economic controls.

NATIONAL AGRICULTURE

Having formed an elementary idea about the concepts of control and competition, let us now divert our attention to their applicability in the sphere of national agriculture. Essentially agricultural operations are not so competitive as the industrial ones are they are more or less complementary, or supplementary, as we shall notice later. That is so because of the fact that there are strong soil differentiations and some of the soils are specifically suited to the growing of certain crops and not others. Again there are climatic limitations, which make it impossible for an agriculturist to undertake a form of activity as his neighbour undertakes. And then shifts in agriculture always take some time before their impact is visibly felt in the economy. It may be correct to say that the keenness of competition is much less prominent in the realm of agriculture than in other spheres of economic activity. Still, with the commercialisation of agriculture, a fair degree of competition has crept in the field of rural life. That would also be an inevitable consequence of the increasing impact of industry on rural life. Again, due to the fact that the scale of farming has enlarged, especially in the more modernised countries, the evils of combination have also become more pronounced in the sphere of agriculture. Estate farming is being practised in several countries, in India Zamindari was only recently abolished. In short, the increasing intensity of competition in the rural sector results in the exploitation of the weaker elements, especially the tenant farmers, amongst whom competition for the acquisition of land for farming is the keenest. Or due to the keenness of competition in the productive sphere, the agriculturist suffers from a depressing of the farm prices and thus undergoes a loss he does not even earn remuneration sufficient to cover his bare costs. Overproduction may result and the glut in the market may follow as a result of this growing desire for capturing the market and the defecation of the spirit of individual farming. Prices of these perishable goods will naturally get depressed and the farmer stand to lose. Hence it is that the enlightened governments launch

upon plans of stabilising the agricultural prices, both at the floor and the ceiling levels. Crop planning is also advised and often even enforced. Thus is brought about a regimentation of the farming activity and a regulation of the agricultural practices and a control of the farming routines. The peasant farmer being the weakest link in the national economy, having the lowest staying power, the state endeavours to protect his interests as best as it can. Though from competition to control in the farming sphere is a far cry, yet the one inevitable consequence of unregulated and unfettered competition is the imposition of controls and the institution of peasant farming instead of estate farming which brings about exploitation in its train.

Co-operation and Collectivisation. It may be pointed out in parenthesis that the various forms of agricultural co-operation, too, aim at the elimination of competition as also reap the advantages of large-scale farming. We propose to deal with this subject at length later, but it may be appropriate to stress here the institutionalising effects of the co-operative spirit within the rural community. The protection of the weaker interests in these communities is an important effect of the prevalence of the co-operative movements. Setting out to eliminate the middleman, the movement ends by eliminating altogether, the evil of competition. In the same manner, the drive for the collectivisation in the sphere of agriculture, also by nationalising the farming units, is effective in controlling agricultural procedure and routine in a manner potent enough to overpower the evils of competition. We shall re-examine the whole question when we study co-operation and collectivisation of Agriculture. Still it may not be inappropriate to point out here that the modern trend is not only toward co-operation or collectivisation, but a system, which may best suit the needs of the agricultural structure in a certain typical environment. In fact, what most States try to stimulate, is co-ordination and integration of agriculture in the general economy. We may name it "mixed economy" although it may have elements of all the systems, right from co-operation to collectivisation. In short, the aim is to eliminate competition and also to lessen the severity of controls, or regimentation of activity.

National Outlook. Coming to a description of national agriculture we may distinguish it both from the international system and individual farming. While, in our survey of world agriculture, we were mainly pre-occupied with the wider outlook from the international angle and re-counted several world forces which are sweeping agricultural economies to-day in national agriculture we shall assess the whole problem from the particularly national angle. Again, in the survey of national agriculture, we shall not take into account as to how a peasant farmer, or a landlord, or

even a particular local rural community set out to solve their typically individual problems. But we shall only take account of the broader national interests and notice how they are served by these communities, or how these communal interests fit in with the national policies. It may again be stressed that, in the world as it is, the international outlook is mostly coloured by national movements and ideologies. Even, the so-called international bodies merely reflect national policies and preferences. Again we must recognise the superior importance of nationalism in agriculture. Even in the communist regime, though it is claimed, that the outlook is international, a deeper examination reveals, that the policies which are followed in practice are intensely national. It may be possible that after some time, the international outlook prevails. Still we should not be oblivious of the fact that such could be the case only among the enlightened and the more educated and progressive sections of the world population. The farmer is admittedly conservative, ignorant and superstitious. To him, international considerations may appear to be remotely distant and thus superficial in shaping his preferences. He remains intensely national.

The Concept Having stressed the importance of national considerations, in the realm of agriculture, we now seek to analyse what the national outlook means. In the *primitive* economies, it may be said the national outlook has not yet developed, it is the tribal or narrowly communal influence that counts. In the *underdeveloped* economies, though loyalties are broadening, still the village and the local considerations pervade the minds of men and strongly colour their actions. Still some sort of nationalism starts creeping in their lives. In the *transitional* economies, however, planning is the order of the day. In all systems of planning with any type of priorities in force, the national outlook strengthens. Planning is not for the interests of any particular group but is undertaken for the broader interests of the country. Thus the national interests begin emerging strongly. In the advanced countries, though international considerations start entering active politics, national interests and considerations are yet very predominant. Looking at the same problem, from the political angle, we discover that under the democratic structure the elected Government, claiming to represent the interest of the people must of essence cater to securing national welfare, howsoever international the outlook of the party in power be. From the economic point of view, revitalising and rejuvenating the national economy are the twin objects that a welfare state sets out before itself. Even in the underdeveloped countries, where an organised system of Government exists, national priorities gain a more important place than merely tribal or narrowly communal interests of local type.

Defence Aspects Analysing further, we discover that among these objectives that of defence is the superior most. The top priority in

all democratic or other types of governments goes to the strategic interests. A country must defend itself against all types of external aggression, repeated efforts at the establishment or evolution of international supranational bodies to stem or crush international aggression, have met with only partial success. It has been rather difficult even to ease the mounting tide of national tensions and overcome national rivalries. Defence, therefore, remains an active and important force in national policy making. The Gandhian ideal still remains only an ideal, which even the intensely Gandhite of India has found it difficult to practice to its logical conclusion. Defence still occupies a place of privilege in the national policy. As argued above, agriculture is a very important source of strength to the defensive organisations, both from the direct and indirect points of view. Directly, rural communities supply soldiers to the defence forces, indirectly, they supply raw materials and food for the fighting front. Thus in national priorities, merely from the defence point of view, agriculture needs to be revitalised.

Coming to the commercial view-point, we find that trade and tariffs have an important bearing on the economic conditions in a country. Recently, greater stress has been laid on fiscal policy in national planning. Fiscal policy is regarded both as a tool of creating more employment and as a weapon of regulating and canalising commercial relations. Certain transitional economies like those of Pakistan and Egypt, have to barter their surplus agriculture produce in exchange for the industrial products and the capital goods so necessary for national economy. Jute plays a very important part in Pakistan's commerce, while the Egyptian economy functions mainly round the cotton surpluses. In the earlier days of Soviet planning, the socialists had to watch the barter terms of wheat against capital goods, and to keep a surplus of grain so that more capital goods could enter the country for the purposes of economic progress. Verily, therefore, agriculture does have an important bearing, through the channels of trade, on the balance of payments, which in turn, may influence the economic potential of the country and rate of planning progress. In the field of tariffs, too, sufficient attention needs be paid to agricultural situation in a country. Though agricultural tariffs are yet in their infancy, still with a view to encouraging the cultivation of certain commercial and food crops states have begun to reconstruct their tariff structure. Even in industrial countries, agricultural tariffs have come into vogue for the simple reason that agriculture need be revitalised. Therefore, we may rightly conclude, that the national system of agriculture, its nature and stage of development, very significantly colour the trade and tariff policies of governments, both backward and advanced.

Total Output and Planning. Agriculture is an important activity from the planner's point of view. The planner is concerned with raising the standard of living and, incidentally, with multiplying and maxi-

missing total output as consistent with national resources. Total output means the sum total of both agricultural and industrial production. It may be held that agricultural production may not form a very significant part of the total production and, therefore, treated not with the same consideration as here but it may be stressed that even when agricultural output forms a fractional part of total production, in a certain economic structure, it receives greater attention from the planner, because the one aim of all planning is to achieve a balance in the economy. The planner, seeks to convert a lop-sided economic structure into a balanced one and, for this, he has to place a greater stress on the development of agriculture, when its place is not one of prominence. Therefore, in the light of arguments advanced in an earlier section of this chapter, agriculture receives greater attention from the planner in the industrialised countries. In the backward and agrarian economies, agriculture is also the target of greater attention from the planning authority. In these countries, the economy is rather backward and not so modernised. Agriculture still retains its primitive character and the Planning Authority, therefore, seeks to divert it into modern channels, canalising the activities of the peasant into fresh avenues, relevant from the national point of view. Therefore, in all cases, where the interests of planning are involved, agriculture needs be either revived or revitalized. From the total output point of view, too, agriculture if firmly established provides a sound basis for permanent, expanded output at a maximum level.

SOCIETY AND THE INDIVIDUAL

Narrowing our horizon we find that the national economy is too wide a concept for the farmer whose outlook still remains intensely local and strongly individualistic. He is tied to the local environments and may not always be prepared to forego the local interest for the satisfaction of the broader national ones, excepting in cases of emergency or crisis. The nation is made up of several communities and societies, and it may be proper to assess the place that the social organisation occupies in the national set up, and the status of the individual therein. The particular farming community is to be regarded as one compact unit, at least in those regions where the individualistic philosophy has not yet percolated to the countryside. Even between the communal and the broadly national interests some divergence may be visible. And it may be possible to perceive some sort of conflict between the two types of targets, the national and the communal. But it may be rather irrelevant to the present discussion to labour this point unnecessarily. Suffice it to say, that the national policies, when framed by wise and considerate governments, do not ignore the local needs and requirements. This is especially so under a system of democratic adult franchise, which secures the right of vote to every adult and thus empowers him to nominate and

elect a representative to safeguard and watch the interest of that particular constituency. Therefore, it would be exaggerating and clouding the whole issue if we were to unnecessarily stress the divergence and the conflict between the local and the national view-points. We may content ourselves by saying that the local needs and wants are satisfied as far as possible in consonance with the national aspirations. With a greater stress on local self-government, and recently on decentralisation, the local bodies and therefore, the local communities, enjoy a greater amount of autonomy than ever before. They are able to pursue independent policies within the national framework and conflicts seldom arise, or assume any serious turn in view of well-defined spheres.

Conflicts in Agriculture. Conflicts are, however, prominent between national and the individual point of view. Complete regimentation has been devised in several countries and also practised, though at a cost to freedom and liberty enjoyed by the nation. These economies are accused of having secured complete mobilization of their national resources to the maximum possible within the framework of the stage of their economic development, only at the sacrifice of the freedom-loving individual. It may again be pointed out that even where such totalitarian regimes do not exist, the individual does not enjoy complete liberty or unfettered freedom in respect of all his activities. That would only be possible in a system of anarchy, where the State has withered away. Even there, the sphere of individual activities is circumscribed by mutual considerations, but we need not delve deep into these theoretical points, we need only emphasise that divergence is pronounced between the national and individual interests. The enlightened citizen may, however, be willing to sacrifice his narrowly selfish interests for the sake of a national end. But the unenlightened may not be quite conscious of these considerations and be absolutely unwilling to adopt this type of outlook. In the agricultural sphere, particularly, the peasant rarely sees beyond his nose and remains relatively unimpressed by the wider social obligations that may be imposed upon him. This is not to say that he completely disregards, or disobeys the directives from men in authority, he may not be able to do so because of law. Still, within the liberty that he enjoys, he seeks to satisfy, in the first instance, the interests of his family and dependents, secondly those of the locality or the neighbourhood, and then meet the national obligations. This also should not imply that the peasant is narrowly selfish, in fact he is very easily swept by sentiments, patriotic and national; and is even ready to lay his life for his motherland. But the fact is that ignorant, as he is, and far-off as he is from the humdrum of politics he remains relatively divorced from national policies.

Total and Individual Output. Analysing, deeper, we may take up total output as composed of individual contributions, that the farmer

makes in his own way, and the sum total of the produce of all the farmers, piled up to make the total output in a country. While the industrialists' production may not have that bearing on total output in view of the fact that he produces only the final goods, the farmers' position is not a little different, in that he has to produce both articles of direct consumption and those of indirect consumption, for the industrialist, etc. Without stretching this point further, we may agree that the industrialist is being fed by the farmer with a regular supply of raw material and other kindred goods for his plant and manufacturing system. The farmer is the basic supplier, catering to the needs of the millions in respects more than one. His decisions are, therefore, of paramount importance from the national and economic points of view. Especially in the field of production, these decisions though regarded as minimal, go to influence the quantity and quality of national output. It may be recognised that the farmer's decisions can be influenced, by setting out certain attractions, which we analysed in a preceding chapter. The point at issue is that the individual farmer does not make an insignificant contribution to the total output, and therefore, the total national dividend, even when he is one of the millions. This is not to presume that the decisions of all the farmers would be identically similar. But, expecting normal behaviour from the peasantry, in the light of the socio-economic conditions prevailing in a country, we may be able to foresee and pre-calculate the pattern of their output, and assess its quality and quantity.

Productivity and Distribution Maximum productivity by itself is not of very great import, there should also be a proper distribution in a system of organised economy. Maximising the output, by itself, may not make the people prosperous, they may not be better off than before because this output remains stocked or piled up with certain individuals out to make profits at the cost of others. In fact, raising the productivity index, without ensuring its proper distribution may lead to widespread frustration among the people, because they may think that even when they have laboured hard, they are not able to reap the advantages of what they did. Conflicting opinions are there, regarding the methods of ideal distribution, and it is out of place to tackle the problem of distribution here. We may only take into consideration the fact that in agriculture, particularly, the peasant must be enabled to reap, to the fullest possible, the fruits of his labour. Basically a family industry, originally run on subsistence lines, farming has only recently been commercialised and that, too, in order to earn more. If then, the peasant is deprived of his rightful share in his own hard-earned income, he would get dispirited and may not put in as much labour as before. True, when prices go down, the peasant may not work as hard as before. But we should not confuse the issue of a share in output with that of the price level. Even when prices fluctuate, the peasant aiming at a constant income, may

find it had to vary, to a considerable extent and an appreciable degree, his output. Agricultural production is notoriously unresponsive to price variations, and the supply situation in agriculture admittedly inelastic. We need not, therefore, bother about the impact of price variations on the system of distribution. We shall re-examine the whole issue in a special chapter.

The Farmer's Place. The individual farmer does occupy a place of prominence in a system of national agriculture. Leaving aside the primitive economies where conscious efforts at organised cultivation are conspicuous by their absence, we find that in all other types the individual farmer enjoys a fair amount of liberty in respect of tillage and can have his own decisions implemented on his farm. In the next chapter, we shall see how all this happens, but suffice it to say here that the calculations of the peasant farmer are effective in national agriculture. Without elaborating on the conflict, that may arise between his decisions and those of the authorities, whether planning or administrative, we may still conceive of him as being a very effective instrument in the hands of the planners and administrators. It is only by coaxing him that a proper co-ordination may be achieved between his decisions and those of the higher authorities, and not by intimidating him that the desired regimentation can be achieved. Experience of totalitarian regimes amply proves this contention for even there, frequent peasant rallies have to be arranged in order to ensure their participation in plans of national agricultural progress.

SUMMARY AND CONCLUSIONS

To sum up, we may say that national agriculture is inter-linked with world systems in respect of sharing knowledge and participating in scientific progress in the field of agriculture and in the allotment of food quotas. A stable national agricultural economy, we argued, is an essential pre-requisite of durable peace. Analysing national policies, we found that the priorities were economic self-sufficiency, including food self-sufficiency, diversification of the economic efforts, balanced economy, co-ordination of agriculture and industry and elimination of the evils of competition and establishment of co-operatives. In respect of all these targets, it was established that national agricultural policies are very prominently effective, for they not only thread the whole fabric of national activity in the sphere of Economics, but they also form the basis for these policies. The national outlook is mainly coloured by considerations of defence, trade and tariffs and planning; here also agricultural policies and their right implementation count for much. Mindful of the conflicts between the individual and the communal and the national interests, with special reference to the tiller, we concluded that maximum productivity could only be achieved if the farmer acted in complete co-ordination with national programmes.

CHAPTER VIII

RURAL ENTERPRISES

General Considerations—Geographical Influences Human Point of View The Economic Impact The Environment Types of Enterprises—Direct or Cropping Enterprises Indirect or Preparatory Enterprises Spare time Enterprises, Cultural and Non Economic Enterprises Direct Enterprise—Seasonal Influences, Weather and Agriculture Soil Humidity Indirect Operations—Nature of Agriculture, Availability of Resources Farm Finances Spare time Jobs—The Remunerative Aspect Training and Education The Personal Factor Summary and Conclusions.

We are now in a position to understand the nature of enterprises in the rural sphere. It may be stated, at the outset, that all these enterprises, through bearing upon agriculture in one manner or the other, are not directly related to farming operations. Some of these enterprises may be only re-creative in their character while others may be spare-time operations, undertaken to increase the income of the tiller. There may be several influences operating in this field, of which the economic ones may not be the most important. Agriculture being a mode of living, it is futile to expect that economic or commercial considerations alone would predominate this industry. Calculations other than economic also influence the nature and scope of the industry. And although agriculture is the pivot of rural life, other undertakings of a non agricultural nature should not be lost sight of.

GENERAL CONSIDERATIONS

After a study of national system of agriculture, in its various aspects, it is proper that we review the working of the rural communities, who as yet hold their own in the national field and are able to make their presence felt. Even in the most regimented economies and totalitarian regimes it becomes well nigh impossible for the state to ride rough shod over the interests of the farming human beings and rural communities howsoever weak and insignificant they may be. Therefore, the rural enterprises should merit our attention before we analyse the problems of farm management, organisation and operations, and assess the place the individual farmer occupies. The farmer is strongly influenced by the locale and the community he lives in. Therefore, his actions and problems are not to a mean extent coloured by communal decisions, problems and enterprises. That is why we seek to have a bird's-eye view (in this chapter) of the various phases of rural activities, as set out against the larger canvas of agricultural operations and farm management. Such a study will amply repay us as it will bring us closer to the rural environment.

Geographical Influences Geographical influences are quite significant in any system of farming, whether in the backward or in the advanced countries. In the first instance, we may interpret this

factor as being locational. It is generally noticed that the distance from the market does influence rural operations to a very great extent. For example, perishable products must be produced near enough the market so that they can be marketed in good condition. True, that the refrigeration and storage facilities, as also improvements in transport, do help to disperse rural operations far and wide. But we may again point out that such improvements reach the peasants only after they have become sufficiently cheap or that the city-zones or marketing centres have themselves reached near the villages. The bulk of different products, or what we may describe as the relation between *value* and *weight*, has also a bearing on the marketing costs, and consequently, these twin factors determine the location of their cultivation. The greater the quantity produced on a given area the lower will be the price per unit and closer to the market will it have to be grown. We are led to trace the relationship between bulk, perishability and transport costs. This relationship, triangular as it is, has a special bearing on the problem of agricultural location, and that of rural enterprises, for it determines what enterprises would be specially remunerative and in which localities. The *second* consideration, under this heading, is that of suitability, geographical and soil, for the production of different crops. Climate, physical, geological and biological standpoints are important considerations in the cultivation of crops. The best crops will be cultivated in certain places. Not that the farmer shall first set out on a soil analysis, but experience and tradition that he inherits for generations of farming in that region, inform him in a very revealing manner about the suitability or otherwise of certain crops. This is true not only of agriculture as such but also of the subsidiary occupations and pursuits, allied to agriculture. Even from the strictly commercial point of view, it will pay only to cultivate those crops that are most profitable and to take up those pursuits which are profitable. We shall discuss in details, in the next chapter, the various farm operations, how geographical and climatic influences together with natural and environmental factors, shape the various agricultural and crop tillage operations. Suffice it to say, that geography, as interpreted in its widest meaning, conditions not only the strictly agricultural or cropping enterprises but also such jobs as subsidiary industries, cottage work, etc.

Human Point of View. Next, we take into consideration the human point of view or what may be termed as *the personal factor*. The personality of the rural worker is actively behind all enterprises in the countryside. Whether these enterprises are going to be of divers character or only of a limited nature, is decided by the villager. In the case of enterprising communities, these enterprises do present a variegated canvas of human activity in the rural areas. But in the case of those communities which are wearing a cloak of fatalism, these

enterprises cannot be multiple, nor even so enthusiastically undertaken, even if the State or some external agency is actively subsidizing or financing them. Experience in India has repeatedly brought out the proof of this contention, all efforts at adding another string to the bow have always been wrecked by the peasants' adamantly fatalistic attitude on life. The peasantry is able to conquer even the inclemencies of weather, provided they are an industrious group, the Swiss peasants serve a good example. So it is that the human point of view must needs be taken into consideration. If the peasants have a mechanical bent of mind they may as well take to some cottage work of a mechanical nature, but if they have some creative faculties nourished through generations, they shall take to artistic production. This point need not be laboured much as the argument is quite self-explanatory. A contented peasantry may not like to take up any work which promises an additional income, contentment in this sense becomes an apology for idleness. We can, therefore, say with some correctness that if the rural populace is enterprising and willing to put in some work expansion will take place in the sphere of rural enterprises. *Vice versa*, if the outlook in the rural areas is damp and narrow the canvas of rural activity will be very small and cramped. That this generalisation holds true in nearly all types of economies is quite a fact. We may even assert that it is because of the outlook that the rural areas, in the primitive economies have developed through ages, that these economies have remained stationary in respect of progress and civilisation. The countryside in the West, is humming with activity that is why these countries have advanced. Therefore, we can assign a place of prominence to this factor, as being indispensable determining the horizon of rural activity. As pointed out above, the human outlook also determines both the sphere and the nature of enterprises in the rural areas.

The Economic Impact Now, we consider the impact of economic and commercial calculations on the type of enterprises that may prevail in the rural regions. Admitting for the sake of argument, that economic calculations do not beset the peasant in the same manner as they do the industrialists or the traders, we have to maintain that these calculations are not quite out of the purview of rural people. Agriculture is no doubt a mode of living and, therefore, followed mainly out of social and environmental compulsion, still it must be conceived that with the march of time the peasantry is getting more and more conscious of the desirability of raising their standards of living and adding another string to the bow. It is also true that all the rural enterprises are neither agricultural nor economic, nor even commercial in their content and form, yet we must agree that a larger variety of them are of the economic type and are undertaken out of motives economic and commercial. This is increasingly so in the present-day rural communities who

are being brought nearer to the realities of life and for whom life is becoming a keener struggle than ever before. We may also admit the contention that rural living is rather divorced from the commercial humdrum characteristic of urban life and that the rural people are either ignorant or remain largely unaffected by the commercial trends of the day, but we must also appreciate the fact that larger and larger doses of commercial and economic intelligence are being given to the rural populace; agricultural information, in particular, has often been entrusted to expert and well-organised agencies. Our point is that economic forces are penetrating the countryside and thus influencing the activities and the enterprises of the people there. Not only that this impact is bringing about a greater multiplicity of such undertakings but also is effective in increasing their diversity. Periodically is stock taken, especially in the advanced countries, of the oldish undertakings, and those run out of fashion substituted by more progressive ones, whose products may be in keener demand. Not this alone, but newer techniques are being applied to these enterprises and costs being reduced so as to yield a greater profit. In short, the economic impact is closely affecting rural life. In the backward economies, too, as also in the transitional ones, the state is setting the pace by discriminatory guidance and selective advice to the rural areas in the matter, organising their economic life and renovating their entrepreneurial activities both at the individual level and the community's canvas. This holds true not only in the strictly agricultural sphere but also in the wider sphere of rural activity.

The Environment. Institutional and environmental factors also deserve to be noticed in this connection. They are both a cause and an effect of rural activities. In most treatises on the subject, these forces have been lost sight of or treated with little consideration. But, as Veblen pointed out, institutional forces are very important in all forms of economic activity. Economic activity, under capitalism, may be regulated by forces competitive but in agriculture the competitive forces do not have that sway as in the other fields. That agriculture is pursued not only out of economic considerations, but also out of traditional and habitual forces, has been pointed out above, times out of number and we may not repeat that aspect of the argument here. Institutional circumstances, therefore, influence agriculture in a much greater and intenser form than they do other types of economic activities. For example, the nature and form of land tenures, may very well shape the rural economy that prevails in a country. Again prevalence of a certain type of land tenure may itself be the result of institutional forces which have been operating there for centuries. Another example may be cited. A particular type of cottage industry may owe its origin to a certain institution which was established some time back or which still dominates

the countryside. Some of the artistic cottage products of India receive the spurt from the nobility and the princely order in the locality. Therefore, it is not incorrect to hold that institutional forces like caste and religion may shape and condition the orbit of economic undertakings in the countryside and the rural areas. In India, particularly, as in most backward and transitional economies, the strength of these forces can hardly be overstressed. The environmental forces, themselves a direct product and resultant of the institutional factors, are potent enough to shape the rural activities to a considerable degree. A Shawl Industry could only have been carried on in the vale of Kashmir, where the inclemencies of weather restrict man from taking up outdoor professions. Pastoral pursuits could only possibly be undertaken in areas with ample grazing lands, good amount of sunshine and suitable atmosphere. The rural activities, therefore, are a product of the environmental and the institutional factors which might have been strong in some earlier times and or are still swaying and influencing the habits of the country people, who may not be educated and intelligent enough either to shake off or to resist the temptation of following the age old rut of tradition, or what is contemptuously termed "superstition".

TYPES OF ENTERPRISES

Coming to various types of enterprises, we find that there are numerous types, though they could be grouped under certain headings. Ranging from agricultural operations of the crudest form they go to the non-economic ones of a recreational and cultural sorts. Rural life is homogeneous and variegated in its several aspects. That was some time back, but the complexities of modern civilisation are invading it now, with the result that it is getting more and more complicated. The farmer devotes some time to agricultural work, and a lot more to other jobs which may not fetch him high returns in terms of money. It is idle to expect that the farmer could ever become a machine and slave himself for the sake of adding another crumb to his table or another piece of linen to his wardrobe. He lives a life not only as competitive and as crowded as his urban brethren do, but rather more leisurely. In an earlier chapter, we saw that the peasant is attracted to agriculture because it affords a larger opportunity for leading an independent, and what is more important, a leisurely life. It is apparent, therefore that enterprises, undertaken in the rural sector, are not merely agricultural in their content, but, of a diversified nature—say subsidiary, recreational ones. We may group them into *four* classes. Foremost among them are the direct or the cropping activities, that is to say those activities that are directly concerned with the agricultural operations. *Second*, we notice other activities and enterprises which are meant to be "preparatory to the agricultural operations for example, ploughing, drainage, etc. *Thirdly*, we find there are

jobs of a subsidiary nature. We can term these as subsidiary industries or spare-time operations. Undertaken with a view to adding to one's income, these activities are only for the spare time, for it could not be imagined that any farmer would sacrifice his routine agricultural operations, the mainstay of his and his family's living, at the altar of a hobby or spare-time indulgence. Lastly, there are the cultural, the recreational and other such community activities, which add a spice to the farmer's life. Data is not available to enable us to assess correctly the place that these non-economic pursuits have in the farmer's life and the community living, but we can safely say that they do play a significant part in the rural zones. It is a very strange fact that in the backward areas where a greater stress needs have been laid on the economic pursuits, greater attention is devoted to recreational odds.

Direct or Cropping Enterprises. Talking first of the direct operations we find that these are mainly related to the sphere of cultivation. Drainage, irrigation and such other preparatory operations, are not included in this group. What we include under this particular heading are the direct cultivational jobs. Village is what we study. Seeding, harvesting, mowing and winnowing, as well as threshing and other related jobs are to be studied. It is not our purpose to concentrate on the technically operational aspect of these enterprises; we shall only refer to them and take notice of these as and how the argument advances. Amongst the various influences that colour these operations, are the seasonal ones. The cycle of agricultural activity and cropping is under the surveillance of climatic factors and the seasonal conditions. Any variation in the cycle of seasons immediately reflects on cropping. In case, the seasons are ahead of their scheduled timings, the cycle of cultivation also follows; if the seasons are late the cropping routine is also delayed. All agricultural crops have their fixed timings for cultivation purposes. The crops will be sown in a particular season, they will be cut in a definite season and harvested in an another definite time. Agriculture is a seasonal activity and must obey the cycle of the Sun. Therefore, this influence in particular is very strong in the sphere of agriculture. Not that the agriculturist is able to conjecture, correctly, the seasonal trends but he so times his cultivation operations that they fit in with the seasons as they are. If the season is not favourable he does not cultivate that particular crop; he postpones the sowing and waits till the season is set. Otherwise, he prefers to remain idle for he would not like to risk a bad crop or a wasted harvest. This external influence is alone responsible for such undertakings in agriculture, as mixed cropping, or the rotation of crops, which could only be taken up if the seasonal cycles are favourable.

Weather and Agriculture. Closely akin to the above, is the factor of weather, which may not be separately dealt with. In view of the

variations in the weather within the same season, the farmer has to be very much conscious of these and adjust his time table accordingly. Although he might have been well prepared for sowing wheat on a certain day, inclement weather may not permit him to do so and he may well have to postpone that particular operation to a more favourable time. Agricultural operations are, so to say, weather stricken. With a good weather all goes well, but in a bad weather the agriculturist faces ruin. Weather is a factor uncontrolled and uncontrollable. While seasons are more or less certain and their cyclical operations foreknown to a great extent, weather conditions are mostly uncertain. In fact, this is the only one factor that still remains out of man's control. Weather prediction is becoming possible through the activities of various meteorological stations and their investigation charts, and weather forecasts are fast becoming a routine and are reaching the peasant cultivator in greater frequency and more accurate detail. Still we must concede the fact that as yet it has not been possible either to overcome or to alter the weather to any considerable degree. Artificial rain makers may very well feel jubilant over their splendid achievements, but it is well known that their activities could only be fruitful within a limited set of circumstances. And then these efforts have not achieved that popularity that they were expected to do, consequently these may well be ignored as being out of the purview of the ordinary agriculturist. Weather, inevitably, remains still an invincible force of nature, it influences not inconsiderably the growing of crops and the other rural activities. A word of explanation seems necessary here, although this paragraph is mainly devoted to the bearing of weather on the sphere of direct agricultural operations it is because of weather that certain indoor industries have thriven in certain rural regions. It may be said without much contradiction that weather is one of the main determinants of rural activity, both in its narrower aspect, *i.e.* of cultivation, and in its wider range of the rural enterprises.

Soil Humidity The next factor, directly bearing on the agricultural operations, is soil humidity. Sometimes, the soil is such that it is able to retain moisture for a longer period of time than is usually the case, and sometimes it so happens that soil drives the moisture into the subsoil where it may be retained, or wherefrom it may further go down into the deeper layers of the earth. All that depends on soil structure. Clayey soils react differently they retain moisture right in the upper strata, this has certain results, for certain crops may not be able to find root when the soil is rather humid. When there is wet land, a different type of activity like cutting weeds, repairing fences, cleaning up of the wood lot and the like crowd in the farmer's programme when there is wet land. This is known as wet land work. This has a bearing on the amount of cultivation work that can be put in on a

certain farm. In case the wet-land work increases, that is to say, there is a greater number of days when land remains humid, the number of days, which can be devoted to direct cultivation would be diminished as also the area that will be under such crops as corn or cotton. Incidentally, per capita efficiency would be adversely affected and it will diminish. This factor, therefore, requires considerable attention. Certain soils are such that remain humid for a longer period of time than others, consequently, the nature of farming undertaken on these soils does undergo a change and is different in complexion.

Frost and Snow. Parenthetically, we should also talk of the conditions of the soil and its reactions with respect to frost and snow. Work that cannot be done, while the soil is frozen, or under snow includes more of field operation. Some of the activities, may have to be postponed, such as potato gathering or beet-root lifting. Farmers usually know the time when the ground gets frozen so hard as to put an end to all these activities; usually they hurry through these activities, before nature has its way, sometimes the permanent freeze comes much later, or much earlier than ordinarily it does, and upsets the farmer's cultivation time-table. Needless to say that this also affects to a great extent the quantity and the quality of cropping. Work should be arranged in such a manner that crops have the full advantage of all these various factors. The general rule seems to be that work which cannot be undertaken in times of freeze and frost, would ordinarily take precedence over that which can be postponed or done later without any loss either to the crop or to the farmer. It must not, however, be understood that there are no jobs which can be carried on under conditions of snow. Certain odd jobs, closely related to cultivation, are possible even when snow covers the ground. Examples may be cited of spreading lime, hauling manure, feeding livestock (all directly cultivation jobs) and some indirect jobs also as reading books on crop cultivation or breeding or attending farmer's courses, (indirectly farming jobs); or subsidiary occupations both of a remunerative type or of a kind related to the pursuit of hobbies, etc., like cottage industries, or recreational or cultural activities that may go to occupy the farmer, when the natural conditions are forbidding, especially in regard to frost and snow.

IN DIRECT OPERATIONS

Let us now probe into the mysteries of the *indirect* or the *preparatory* operations. These operations are related to agriculture but only indirectly. They are of a preparatory nature. By undertaking them, preparation is made for starting the agricultural enterprises. They are also agricultural in their nature but the difference is that they are not directly agricultural. What we mean to stress is that they precede the agricultural operations, like cultivation, sowing, etc., etc. When the harvest has been

cut and another harvest is to be cultivated, the farmer starts on certain lines and undertakes some jobs which are in the nature of preparation to the main agricultural operations. For example, he may take up weeding, draining, etc. They depend upon the nature of the main agricultural operations to be undertaken by the farmer. In certain crops, a great deal of preliminary work is required, while in others so much preparation need not be taken in hand. Some of the crops themselves are cleansing crops, the reader may be referred to Chapter II. In short, the type of agricultural produce that is to be cultivated will determine the form of the preparatory operations. These operations may also depend on the availability of the resources in the field of agriculture and vary with individual farmers. This availability of resources is to be interpreted in two respects, *firstly* in regard to the local availability of resources, capital, etc., *secondly* the availability in so far as the individual is concerned. That is to say the limitations imposed upon by his own means. In this may also be included his finances, or he may extend his preparation and undertake certain improvements on the farm provided he has the financial means to do so. Examples are not wanting to prove this contention, the Indian farmer is unable though not unwilling to make improvement on his land but he lacks the financial means for that, being extremely poverty stricken. Listing these operations we may enumerate fencing, weeding, pest control, manuring, draining, laying water pipes, constructing farm building, store houses and granaries. In a broader sense, we can easily include all those jobs that may go to improve the farmer's technical equipment and his personal qualifications and experience and knowledge. These are admittedly of great value.

Nature of Agriculture Examining all these factors in rather detail we try to understand how the nature of agriculture has an impact on the indirect enterprises in the rural sphere. Elaborating the argument given above, in the last paragraph, we can say that certain crops require a lot of preparation. For example, the cultivation of wheat calls for some sort of enterprising work done before the actual sowing takes place. A conscious and enlightened farmer, aiming at reaping to the fullest his soil by compelling it to yield maximum productivity, will undertake all sorts of preparatory work that may be necessary for increasing the productivity of his farm. Special fertilizers may be required for certain crops, special treatment may be required before the soil can be receptive to certain special types of tillage, special drainage and irrigation may be necessary before a certain seed can be sown and grown in certain pieces of land, all these are necessary prerequisites for successful farming. Agriculture being a variegated industry, including in its orbit dairy farming, cattle-feeding, planting and horticulture.

ture. We should also see how these other types of agricultural activity influence preparatory enterprises. In dairy-farming, for example, the farmer has to make preparation for increasing the milk and meat yield. He has to start on ventures of artificial insemination or stack hay and other fodder, much in advance of the dry season. Similarly, in cattle breeding, the purpose has to be kept in view and the preparations to be made according to the requirements both of the trade and the market. In plantations, much care has to be taken and quite in advance of the actual fruit season of the plants, which have to be sprayed against certain pests and fed on specific nutrients. If these preparations are not undertaken the croppage suffers. Even in the sphere of fisheries and forestry, the farmer has to be conscious of these preparatory procedures. He must plan for growing forest groves in selected places, both from the point of view of agriculture and forest yield, if he is desirous of providing a second string to his bow and safeguarding the strictly agricultural interests. In fisheries, too, catches must be restricted to seasons other than the breeding one. Then certain preparations, like adding nutrients to ponds or reserves have to be undertaken in order that the resources may not be depleted soon. Preparatory operations are essential.

Availability of Resources. The success of these indirect enterprises depends upon the availability of resources required for them. For example, to be able to fight the weed-menace effectively, the farmer should have the modernised equipment for this purpose and be also trained to undertake the operations. Similarly, his resources, in order to be able to drain out his land and to reclaim it back for cultivation purposes, should not be very meagre, if he is keenly desirous of successfully undertaking them. Again, for the purposes of mowing, etc., the peasant should be conversant with the best methods that he can lay his hands on. That does not end the story. Usually, the farmers have to depend upon the local resources. Therefore, they must need survey the local resources which they can utilize for their purposes in a successful manner. Usually the farmers also know what local resources are available and adopt means to utilize them. But the rub is when they are unable to utilize the same either because of ignorance or their inability to do the same on other grounds. With the development of the means of transport and communication the farmers have at their disposal means and resources which may not be, strictly speaking, local in character and availability, but be supplied from remoter sources. Usually, an enterprising farming community can pool these resources in a co-operative or a collective manner and lend them or hire them out to their members at nominal rates. Capital resources in particular may be pooled. In modern advanced and advancing countries, the practice is also to enlarge the equipment, and capital of the rural community, and bring within their reach the resources that they may otherwise not be able to command. Still, we must

appreciate the fact that the availability of the resources whether from a central agency, or from a co-operative association or by personal means, does play an important part in determining and shaping out the indirect enterprises in the sphere of farming and agriculture. Were the rural community deprived of this, it would become well nigh impossible for them to proceed ahead with their preparatory indirect activities, with the consequence that the farmer's income would dwindle and national production suffer. In short, the purpose behind agricultural planning should be to multiply the resources required for the successful pursuit of these indirect, but very essential, operations.

Farm Finances Financial means are another limiting factor in this field. With ample finances at his disposal, even the most unenterprising of the farmers would be willing, provided his outlook on life is normal, to advance his agricultural activities. Finances are the farmer's greatest headache. As we shall see later, farmers all over the world have to face the problems of money and capital resources in one manner or the other. That is why, the farmers have a low staying power. The nature of the industry, or its character, or its operational cycle, either one of these factors or all of them go bring about this financial crisis in the farmer's routine of life. The need on the part of the farmer for more and more money is not of the same type as that of the industrialists for more investment. It often happens that while the industrialist requires more money and financial aid for purposes of expanding his industry and enterprise, the farmer needs it for the resuscitation and continuance of his enterprises. Even if he is not a spendthrift he still needs money because his enterprise is hazardous and dependent upon the freaks of nature over which he has little control. In his order of priorities, the first preference, in the matter of investment, goes to cultivation and tillage. So varied and so extensive are these twin operations, that he often loses sight of the indirect enterprises that he must need also undertake. The time-lag in agriculture is much longer than it is in the industrial sphere, where the marketing problem is not so complicated as in farming. Some time lapses between the actual harvests and the receipt of money therefrom. Therefore it is that farmer's need for money is not at all parallel to the industrialists' requirements for more and more investments. First priority having been placed on the direct operations, most of the farmer's resources are depleted when the indirect operations are to be started. In the backward countries especially, where the vision of the farmer is rather narrow and his planning capacities limited, the indirect enterprises are relegated to an inferior place. Even in the advanced countries, the same attention is not paid to these operations as to the direct ones. In the light of these considerations we must concede that most of the financial

resources of the farmer (and limited are these in the case of the individuals) get dried up before the turn of the indirect operations comes.

SPARE-TIME ENTERPRISES

Next, we consider what we call *spare-time* or *subsidiary* enterprises. The purposes behind these is to add another string to the bow. The farmer's routine, especially in the matter of cropping, is finished in about half a year. The farming jobs are not office jobs. The farmer does not have to attend to his work within fixed hours. Sometimes, he works from dawn to dusk and sometimes he may be called upon to devote most of his time round the clock. But once the harvesting is over, he has leisure to spend. Between harvesting and seeding elapses a considerable period of time. It is in this period that the peasants are advised to undertake what is known as subsidiary work. Even during the farming days, when the cultivation duties call for strict vigilance on his part the weather may make it impossible for him to stir out of doors and attend to his jobs. During these infrequent gaps, he is advised to take to certain spare-time occupations. In the backward countries particularly, the argument is a little different: the peasantry is poverty-stricken subsisting on a sub-human standard of living. Here much stress is laid on the spare-time activities in order to add to the farmer's income and make him more self-reliant. Looking at the problem from the sociological point of view, we find that the objective may as well be the prevention of crime among the rural communities. An idle man's brain being the devil's workshop, criminologists have found that it is during the period of intervals between one harvest and another that the crime-curve rises very steeply, indicating an abnormal increase in the crime rate. Therefore, spare-time jobs are strongly indicated in the backward, underdeveloped economies. In the regions experiencing a transitional stage of economic development, the stress is upon the multiplication and enhancement of production. Therefore, the farmer is asked not to while away his time in idle gossip but to contribute his little bit to the national production drive. In the advanced economies subsidiary industries are already in vogue among the rural people who are now modernizing them and earning a lot out of these undertakings. In short, the place that the spare-time jobs occupy in rural life and activity is fairly high and must be thought of as being intimately related both to planning of progress and prosperity and to raising the living and sociological standards of rural communities.

The Remunerative Aspect. We propose to study now the various aspects of the spare-time industries and subsidiary occupations in rather details. Various factors compete for our consideration.

Some of the factors have been touched above in the last paragraph and they need not be elaborated here, for the simple reason that they are mainly non-economic in character and may not appropriately fit in, in economic analysis. The factors adverted to were the bearing of crime rate on these jobs, the spending of idle days, and the rural remuneration point of view. We shall take up the last for our consideration. The remunerative aspect is the one aspect that would appeal most to the farmer. Without distinguishing between the various degrees of economic development, in which various communities may find themselves, we can generalise that all farmers would welcome the idea of increasing their incomes. It is the remunerative side which appeals to the peasants the most. Such industries, or occupations, should be selected as may yield the farmer a ready revenue. This is not an easy job for their selectiveness will vary from time to time and from clime to clime. Highly remunerative industries, like watch making or diamond cutting, may as well fall outside the purview of an average farmer's attainments. But within normal limitations of farming communities, we are entitled to advise on most remunerative occupations. This has certain other factors involved and it needs a more detailed scrutiny. Though we shall re-examine the subject below we may also state here that the farmer should be assisted in reaping to the fullest the rewards of his spare-time efforts. If that be not possible, he might as well be tempted to start on idle pursuits and indulge in such vices as ligation, bride purchasing, crime committing and gossip mongering. It is the problem of marketing again that faces the agricultural planner rather complicated, for if the marketing costs are reduced the products of these subsidiary pursuits may well fetch for the peasant, working in this hamlet, a remunerative reward. One thing that needs re-emphasising is that the remunerative aspect must never be lost sight of, even in the most religious of communities and most fatalist of all sections of population, the one strong urge impelling the human beings to activity is the economic one, and the farmer is no exception to it.

Training and Education Training and education are important pre requisites to subsidiary occupations. Even when the right selection has been made and there are finances and other resources lying at the disposal of the rural community, and the opportunity unfettered and unenviable for these people to take up subsidiary occupations, these pursuits may remain unattended for the simple reason that the peasantry do not have the necessary training or education for these jobs. In India, particularly, the peasants, in certain Community Projects do have a willingness and the state an organisation to help them in these pursuits, but the one factor that impedes a successful enterprise in this respect is that they do not have the necessary preliminary training, nor even the educational equipment so essential for the same. Even bee-farming

may call for a certain amount of preparatory knowledge, experience and technique on the part of those undertaking it. Similarly, Khadi manufacture, supposed to be the simplest of all rural enterprises and cottage industries, requires a certain amount of training in that field. That is why most states, in pursuit of their policies to foster the cottage industries, have already started work centres for the purposes of imparting training and the necessary technical skill to the peasants. "Learn while you earn" schemes have preponderantly influenced planners. Education need not imply a mastery in reading, writing and arithmetic (the three R's), but a fair knowledge and good consciousness about the essentials of the industries proposed to be adopted as subsidiary occupations. It is in the light of this contention that adult education, or what is more fashionably known as social education drives have been launched especially in countries trying to rehabilitate rural life on a sounder and a firmer footing by means of extending and encouraging the sphere of cottage work. In short, training and education are very important in farmer's equipment not only for the purposes of improving the tone of agriculture, but also for the sake of successfully earning another penny. The farmers are seldom attracted to these facilities unless they are assured of adding to their meagre monetary resources while undergoing the training.

The Personal Factor. Last, but the most important, is the personal factor that influences, in a very strong manner, the complexion of the subsidiary enterprises. The farmer's outlook, together with the environmental behaviour in his community are, in no mean way, responsible for his preference for these professions. With fatalistic outlook and superstitious traditions we could hardly be expected to extend his sphere of activity and try to raise his standard of living. The art of spending the leisure is the most difficult one, and the ordinary farmer, with his limited mental horizon and narrow vision could not be expected to have an insight into the problems that are consequential upon this. Their views and interests are coloured by the traditional approach to these problems. Farmers, as no one else, are the creatures of circumstances. They are the product of their environments. They live on and are the true sons of the soil. Hence the personal outlook moulds, to a very considerable degree, their attitude on the spare-time jobs. Even, in the most regimented economies, this personal factor has to be reckoned with, for the severest dictatorship, may not be able to goad the peasantry into directions and channels of work that they may not like. It is, therefore, that the machinery of propaganda and publicity is set in motion, in order that the cultivators' outlook on life may be influenced and coloured according to the desires of the planners or the administrators and that the well-thought-out priorities may find implementation in the rural sphere. In the light of

these considerations the personal factor assumes a place of preminence in all types of rural economies. Much can be made of even the limited resources, provided the peasant has the drive in him to make the fullest use of these. Examples are not wanting, the case of the Swiss peasant may be cited who, through the dreary, frosty and snowy long months of winter, plods on with exquisite watch making and thus conquers even the invincible nature, so inclement. Nearer home, we may refer to the Kashmir worker, who in his secluded and far-flung cottage, works hard and produces fine artistic pieces of which even the most modern designer may well be proud of. And on the opposite, may be given the example of the primitive aborigine, living amidst the luxuriance of nature, and provided with ideal conditions in regard to the raw materials, but still spending life in primitive conditions, because he lacks the *will* to take up any job whatever.

SUMMARY AND CONCLUSIONS

To sum up, we may have a bird's-eye view of the rural enterprises as described in this chapter. We noted the geographical influences that have their say in the matter of selection of these enterprises. The human point of view was considered because it is easily the most important one. The impact of economic and commercial calculations, on the type of enterprises was underlined. This is especially important as agriculture is becoming commercialised and the agriculturists getting awake to economic calculations. Institutional and environmental factors were also noticed in this connection. The sphere of their influence is rather wide, though not so apparent or outspoken. But in the agricultural set up, particularly, the force of the environmental and institutional factors, both in the selection and the nature of the rural enterprises, cannot be underestimated. These enterprises, were grouped into *four classes*, the cultivation operations, the preparatory ones, the subsidiary industries and the cultural activities. We decided, in the light of our analysis that the cultural activities and the recreational odds fall outside the domain of Economics, and could be conveniently omitted from this study. Under the direct operations were included the cropping and the cultivational activities, special note was taken of the seasonal cycles operating in the sphere of tillage, the variations of weather with their bearing on the cropping operations, and the limitations imposed by soil humidity with special reference to rain, frost and snow as also the composition of the soil, in its bearing on agricultural operations. Probing into the preparatory or indirect operations we found that they are quite significant, as a special devotion to them amply rewards the farmer in increased productivity. They are dependent on certain factors, the nature of agriculture, availability of resources and financial means. Specific preparatory work is called for, for specific agricultural enterprises, but the scope of these activities is limited by the avail-

ability of the means, the locality and the region in which they fall. Financial limitations are also strong enough to shape the condition the orbit of the preparatory work. While considering the scope and nature of subsidiary enterprises, we found that the remunerative technical and personal factors are the main determinants. In the next chapter, we set out to delve into the farm operations for it is time that we devoted out attention to the individual farmer, the mainstay of agriculture.

CHAPTER IX

AGRICULTURAL OPERATIONS

The Problems—Competing Lines of Production—Choice Between Crops, Livestock and Equipment, The Principle of Choice Farm Operations and their Selection—Operational Shifts Costs and Operations Nature and Geography Agricultural Operations—Competitive Operations Supplementary Operations Complementary Operations Summing up Routine or Sequence Operations—Planning Operations Preparatory Operations Substantive Operations Subsequent or Follow up Operations Major, Minor and Subsidiary Operations Productive Unproductive and Wasteful Operations Farm Cultivation—Choice of Crops Specialised Farming Mixed Farming Diversified Farming Multiple Farming Subsistence and Family Farming Modern Mechanised Farming Plantation Vegetable Farming Livestock—Choice of Livestock Different Types of Cattle Farms Marketing and Miscellaneous Summary and Conclusions

The place of the individual farmer in the agrarian system remains now to be assessed. We examine, in detail, the nature and character of the farm operations and see how the individual peasant selects and integrates these in order to achieve the maximum result. The national system of agriculture is composed of rural communities, the working of which we detailed in the last chapter. In the village systems, the individual farmer occupies a place of prominence. Even the collective and co-operative farming enterprises assign a significant place to the individual farmer. His preferences do matter. Under hypothetical conditions of an extreme regimentation, the individual may at times fail to carry out certain obligations, simply because these conflict with his own aptitudes and clash with his personal "whims", and the centralised authority may not, every time, be in a position to take strict and exemplary action against these defaulters. In a "free" economy, however, the role of the peasant farmer is quite significantly recognised, individual decisions go to constitute the national policies, for the state does not much interfere in the preferences and likings of the individuals. In a land of peasant-proprietors, especially, the complexion of rural communities and the character of national agriculture is determined by the humble peasant, working quietly in his hamlet. Essentially, the farming communities have a highly individualistic outlook, and farmers have a way of sticking to their own personal fancies and prejudices. And farming is a more independent profession than any other calling. Hence proper it is to study the nature and purpose of agricultural operations, the problems arising therefrom, and the issues attendant thereupon, for that would provide us an insight into the preliminary background of the subject of farm management and organization.

THE PROBLEMS

Examining the *problem* at close quarters, we discover that it is not so simple as it appears to be. It has several facets which demand our attention. A farmer's business is not so direct, his job not so easy and his attention not rivetted on one thing alone. He has to reconcile several interests of a conflicting nature. He has look to the priorities of planning the farm and so use his land, labour and equipment, that minimum possible expense is incurred to secure maximum results in output. He must determine what cropping system will give the best remuneration; to what extent the various classes of livestock may be used for different purposes; what equipment should be secured and for what purpose; and lastly, what marketing significance attaches to the various enterprises that he undertakes. He has to weigh all the different conflicting considerations and so chalk out his plan of action that the various operations are dovetailed, without loss of time, labour and money. Not this alone, but the peasant has also to eliminate *waste*, which may often go unnoticed, especially, in so far as farming is concerned. And he should also assess the various farming enterprises in the light of the main objective of maximum profitability. High profits usually arise when the costs are the lowest. On a farm, this means sufficient possible self-sufficiency in the enterprises, for then the question of separate costs will not bother the peasant—there will be *joint* costs with several by-products.

Competing Lines of Production. There are several competitive lines of production which make demands on the resources and time of the farmer. Of course, the same amount of labour and equipment are not used in every case. But the fact remains, that the peasant has to pick and choose out of several enterprises open to him. He might either take to tillage, dairy-farming or any other type of operation. This is not to suggest that all farming enterprises are mutually exclusive but simply to lay greater stress may have to be placed on one or the other: there may even be a hegemony of all the operations selected, so as to enable the peasant to reap the full reward of his work and the best out of agriculture. The main enterprises that attract the farmer's notice are cultivation, dairy farming, plantations, horticulture, marketing etc., etc. *Cultivation* refers to the raising of crops of the food, fodder or the commercial type. Easily the most important, this is the most widely practised in all the countries, whether advanced or backward. Next rank *plantations*, which are similar operations while a cultivator engaged on cereal crops may be able to reap the reward of his labour within a very short time, the planter may have to wait sufficiently long, say a decade or so before he could expect to sell the produce. Plantations may have to be placed in a distinct category: they are a class by themselves. Enterprises relating to cattle come next in order of priority; e.g., cattle-breeding, dairy-farming, etc. Nearly all the farmers;

especially in the backward regions, do undertake some sort of these enterprises, though mainly for subsistence and power purposes

Choice between Crops, Livestock and Equipment Each function has become specialised, huddled in the more advanced countries and could hardly be huddled up with other farming routine. What is implied is that the complexion of farming must distinctly be the specialised one and not a mixed one. The pursuit of one type of farming dominates the agricultural activity, though not to the exclusion of the others. For example, the farmer raises cattle, just as he raises crops, for the purpose of profit making. This form of activity has assumed considerable significance in certain countries like Argentina, where the whole economy hinges round the production and marketing of mutton. Similarly in Australia, sheep-farming has assumed great importance. The next important enterprises relate to marketing, which has always remained the foremost of all rural enterprises, being the most directly remunerative, though this operation has unfortunately fallen in the hands of the specialised non rural agencies that have begun to exploit the peasant. There has been a shift from subsistence farming to surplus farming for the market disposal. Needless to say, that a good system of marketing, which holds out the promise of good remuneration to the peasant is a blessing. Miscellaneous operations are of a twin nature, *firstly* those directly concerned with agricultural operations, e.g. irrigation, draining, etc., and *secondly*, the subsidiary ones, like cottage work. The former need not be given a special treatment, for they are included under "ullage", while the latter merit a separate treatment, under the heading *subsidiary operations*. We have enumerated five types of "operations" — Cultivation, Plantation, Cattle Enterprises, Marketing and the Subsidiary ones. Before, we set to discuss the nature and the place of each of these enterprises in the farming business, we should acquaint ourselves with the "principle of choice."

The Principle of Choice The *principle of choice* is the most important one in all economic discussions for it involves a study of human preferences and priorities, and an understanding of the same guides us through the confusion of conflicting and competitive activities. A slightly different treatment, however, is warranted in the realm of agriculture. There is no universal principle of choice, which could be applicable without any exception. But a broad generalization could be made. A farmer would select those operations for his concentration that would make it worth while to devote his time and resources to those very operations rather than use them for leisurely pursuits. Careful consideration must be given to the character of the expenses and the availability of the different resources at each period of the year, also the varying demands made by these enterprises on these resources. The above rule is very general in its implications. The agricultural operations may be divided into two categories, the *major* and the *minor* ones. The principle of

choice refers to the major operations and not to the minor ones. The minor operations should be so selected that the major operations do not suffer in point of productivity, or the efficiency of the farmer. The minor operations must fit in so as to assist the farmer in his major pursuits: at least, these minor operations must not, in any way, conflict with the major pursuits. On the other hand, the major operations have considerable influence on the selection and nature of the minor enterprises. Some labour and equipment and enterprise need be diverted to the minor operations; hence the selection of this sector of farmer's activity should be such that the diversion of the above-mentioned factors should be the easiest possible and be such as may not upset the major operations in any manner. If possible, the selection and timing of the minor operations should be such that they do contribute to the productivity and the efficiency of the major pursuits. For example, in dairy-farming, the stress is of course, on the raising of milch-cattle, but in the minor cultivation jobs, the emphasis must needs shift to the cropping of the fodder crops. Similarly, if the main pursuit is plantations, the minor jobs like farming should be so selected that the main job is not interfered with. Most systems of farming are so designed that one, or, at the most two enterprises constitute the nucleus of a farming operation and have considerable influence on the rest of the pursuits. When this principle is followed, it does not necessarily mean that only those operations will be picked up for which the best facilities are available; we cannot lay all the stress on the availability of resources alone, it is the resultant profitability that matters. The farmer has to weigh all the different factors in their proper perspective.

Farm Operations and their Selection. We should also underline the impact of the changes in prices and in costs on the selection of the different operations, for this is another aspect of the same principle of choice, in its dynamic context. To make the analysis more reliable and realistic, the ever-recurring changes in price, and costs of different agricultural products must not be lost sight of. Changes occur in the prices of farm produce, as also in the costs of labour, land and other materials used in their production. Therefore the decisions which a farmer makes in this regard must be reviewed in the new price-cost relationships. It is only the changes in the relative prices, and relative costs, and the price-cost relations that have a disturbing influence. These changes may either be of a temporary duration or of a permanent nature. Temporary fluctuations, such as may result from annual crop yields, speculative price movements or other similar causes, may very rarely cause shifts in the farming operations, involving such permanent decision as new investment in the purchase of machinery or buildings; these may only be postponed or delayed for sometime. Sometimes, these temporary changes are anticipated by experienced farmers, or by other farmers through the state information agency; in this case, there may as well be tempo-

rary shifts in the farming routine, if possible, for often the operations already undertaken before the coming changes were known, are difficult to divert to other channels—they have to be followed to their logical end. Still, most farmers, if timely warned of the impending shifts in the sphere of agriculture, would like to take advantage of the short term price fluctuations, or the cost relationships, and may at least make effort to bring about the desired change in their operations. But the practical limitations are rather rigid. We shall have occasion to study the problem of price-forecasting in a later chapter, suffice it to point out here, that the average peasant is neither so wide-awake, nor is he so well informed as to be able to bring about the desired change within the short period. Hence, temporary fluctuations do not bring about any noticeable changes in farm operations.

Operational Shifts Permanent changes in the price-cost ratio and in the structure of relative prices and costs, are not without their consequences in the realm of agriculture. If and when apparent, there would be corresponding shifts brought about in the farm operations. Time-lags there may have to be between the first appearance of these changes and the resultant shifts in the farming sphere, quick adjustments may not be possible, nor even desirable, for that may mean a lot of waste both from the peasant's point of view and from the national angle. Such permanent changes may follow from some fundamental economic variations, say in the pattern of urban areas and localities, or in the consuming habits of the people, or in the character of trade relations, or in the planning targets before the nation. The increased demand for bulky and perishable articles, consequential upon the rise of an urban settlement in the vicinity, for example may be effective in bringing about a change in the nature of the crops cultivated in that region. A change in the consuming habits of the people, if of a permanent nature, may be responsible for bringing about similar permanent changes in the relative prices of different products. Correct adjustment of the farming operations to these permanent changes requires a correct appraisal of the significance of these changes in their impact upon them. For example, the changes in the relative prices of certain crops, resulting from changed demand for utilising of same, may be effective and potent enough to alter the area under that crop.

Costs and Operations Analysing the effects of the changing costs of land, labour and equipment on different operations, we find the corresponding changes in their selection rather pronounced. For example, the rent which must be paid for the use of land may become an important causal factor in adjusting the use of land to the cultivation of the most productive operation on the farm. "Rent", in this context must not be understood in the theoretical economic sense of being the "differential surplus", but is understood in common parlance. Therefore, the payment of rent, and the manner of its

payment, does, in no insignificant manner, influence, the uses to which land will be put, and the nature of the farm operations. A calculating peasant will certainly take into consideration the fact that in order to be able to pay the cash rent, he must cultivate such crops as give the highest return in terms of money. Similarly, changes in the cost (wages) of the farm labour, other things being equal, may influence the choice of these operations. In the event of a labour shortage, arising out of an increased demand from the neighbouring urban area of the dispersal and ruralisation of industry, the peasant may have to undertake such operations as require much less labour, with the consequent shift from intensive crops (e.g. tobacco) to more extensive crops like corn, which require very few labour assistants. Again, the changes in the costs of equipment, (e.g. the machines required for the farm become costly,) may lead to an economy in their use, or to the introduction of co-operative farming, and therefore, co-operative ownership of the equipment. Or such operations may be undertaken, to the elimination of others, as may not necessitate the use of more expensive machinery. Shifts in the sociological field, too, have their repercussions, on the nature and character of farm operations. A farmer, with a growing family and with increasing number of hands available from within the family fold, may deem it desirable, to adopt more intensive enterprises and operations on his farm, so as to provide increased employment to the members of his family and his dependants, as his children grow maturer enough to help him, or he may extend the sphere of his agricultural enterprises. Though conceivable, *theoretically*, it is a well-known fact that the bigger estates get split up on the death of the head of the family; sub-division and fragmentation proceeds apace.

Nature and Geography. The principle of choice is also influenced by natural factors and geographical considerations. In the first instance, relative prices at the farm determine the divisions of territory among the various types of farming operations. The differences in the farm prices arise out of the perishability of the farm produce and their quantity. Here the distance from the market counts for much, for the perishable articles would tend to be produced near the market, or under such favourable conditions as those of a speedy transport system or a scientific system of cheap storage. Also, the bulkiness of the produce, or what may be described as the relation between value and weight, having a direct bearing upon the marketing costs, would be another factor taken into consideration when undertaking the various agricultural operations. Agriculture, thus, is influenced, in no mean fashion by the nature of economic conditions. In the vicinity of the urban markets, therefore, will be grown those crops and undertaken those operations where product is relatively greater in weight than in value. Or, in the vicinity of the city-markets may be laid a greater emphasis on the pursuit of marketing operations, rather than the strictly cultivational ones. Economists have tried to draw concentric circles about the

central market indicating the nature of farm operation that may wisely be undertaken by the conscientious farmer. Purely physical and biological factors may also influence the nature of the farm enterprises and agricultural operations. Certain areas may be specifically suited to the cropping of certain produce, the pasture lands may encourage sheep-farming, while the black soil may provide an incentive to cotton cultivation. Here again the price factor must be taken into consideration, for the more remunerative crop will attract the peasant's attention rather than the less profitable one. In his choice of operations, he would be very likely, drawn to that operation that gives him the greatest income with the least botheration. Hence, in view of the geographic factors like location and soil, the farmer should pick up those operations that are likely to fit in both with the price structure, and the unchangeable locational and physical factors. True, that these geographical and natural limitations have been overcome, but farm operations, being largely outdoor, and dependent upon the mercy of nature, the part that the "natural factors" play is rather decisive.

AGRICULTURAL OPERATIONS

Agricultural Operations Having discussed the principle of choice, we now describe and discuss the various agricultural operations and undertakings and how they are selected. As pointed out above in the preliminary paragraphs of this chapter, the agricultural operations cover farmings, live-stock, specialised operations and miscellaneous operations. Farming being for the use of the family or for purposes of marketing (and a commercial enterprise), these operations are quite important. Certain amount of planning is also undertaken on the farm. Some investment is also required in it, though this varies from farm to farm. For example, under cereal farming, the investment requirements are entirely different from those for specialised crops. Irrigational farming is not a little different from horticulture and vegetable farming. Dairy farming has needs which are distinct from poultry farming or cattle ranching. All the operations are classified in a certain manner, depending upon the point of view underlying the analysis. Agricultural operations, which have already been grouped as cropping enterprises, plantations, marketing and cattle enterprises, could also be classified as competitive, complementary, and supplementary operations. This classification appears to be quite scientific. There could be still another classification. We could group these agricultural operations as planning, preparatory substantive and follow up operations. This is another point of view. The agricultural operations may again be classified as a part time, or whole-time or home-craft and domestic ones. It is not our purpose to multiply the various classifications. We shall take note of the more important ones. The last classification doesn't have much connection with economic analysis. It looks at the problem from a different angle. It may be an improvement on this

if we classify these operations as proprietary, self-cultivational, tenancy and co-operative. But this also is liable to confuse the real issue. For we shall discuss these *systems* of farming in a separate chapter. Without further hair-splitting we shall take up the two classifications we have recognised above and discuss the various agricultural operations with reference to these two. First, we deal with these operations from the point of view of time and later on we shall analyse these operations from the angle of routine.

Time Operations: Competitive Operations. Under the heading "time operations" fall *three* types of agricultural pursuits, which may be adjusted according to time. *First* come the competitive operations which are those that require attention at the same time of the year. Such enterprises may be conflicting in their demands for the attention of the farmer. The farmer has to pick and choose whether this enterprise may be undertaken or whether another one because both cannot be fitted into the time-table of the peasant. The agriculturist, therefore, applies the principle of choice, as discussed above, and prefers to undertake and follow that operation which gives him the greatest remuneration. These operations are mutually exclusive; the pursuit of one excludes the undertaking of another. Such instances are rather rare. For mostly the agricultural operations do not fall in this category. Agricultural production is mainly joint production so that the growing of one crop may actually mean the supplying of several commodities. Still, it may be objected to that *one* crop may be grown, to the exclusion of the other operations. This may mean again that the farmer becomes specialised. Therefore, we have to admit that certain operations, like cotton farming, for instance, may mean exclusively cultivating one crops. Certain crops do demand complete attention from the farmer and it may become well-nigh impossible for him to take up other jobs along side, for the main enterprise may suffer. He has to think while choosing the type of operation that he likes to take up. What he should have to take into consideration is the facts of geography and economics, and pursue a job which, in his opinion, brings about the maximum net return. A word more in this connection. Competing operations do not at all mean that they are whole-time or permanent jobs to the exclusion all others.

Supplementary Operations. Enterprises may be said to be supplementary when their demands for labour and equipment of the peasant do not conflict. These operations supplement each other in various ways and thus help to reduce, or even to eliminate the idle time of men and equipment as also idle land. Fallow crops, for example, are supplementary since they require little more labour than the fallow and provide tilth for the soil. Similarly, corn and oats will be regarded supplementary. The work of cultivating a corn crop does not clash with the jobs for oat cultivation. Small grains demand the farmer's labour just when he cannot be working on the corn fields. These supplement the cereal crops in providing

employment and also provide a sort of a "nurse crop" for the meadows. Similarly, the clover harvests precede these and do not in any way overlap any other crop. These enterprises are more or less supplementary. Cultivation and marketing enterprises, too, may be regarded as supplementary, for one precedes the other. Such enterprises are of economic significance because they bring about an adjustment in regard to equipment, machinery, labour and even land in their various employments. These ventures are well integrated, and, from the economic point of view, *supplementary* operations should be preferred to the competitive ones which are, to say the least, mutually exclusive. It is happy to note that most of the enterprises on the farm are supplementary in their character, and can be fitted into the farmer's timetable one after the other. Already, a search is made by the farmer for finding and discovering a happy and remunerative blending of those enterprises which may be *supplementary* and, therefore, more profitable. It should not be understood that the competitive enterprises are also supplementary, because they may also be taken up one after the other. There is a distinction between the two. The supplementary operations are such that while the preparation for the first has been completed, and the operation "set", the second operation is started off, while the competitive operations are such that attention devoted to one is total and cannot be devoted to another. Hence the supplementary operations may be undertaken, nearly simultaneously or may immediately follow one another, while, in the case of the competitive ones, the operations are so designed that when one is undertaken another one cannot be taken up.

Complementary Operations Enterprises may also be said to have a *complementary* relationship to each other. Complementary relations exist when one enterprise or operation makes a definite contribution to another one. In the case of these operations there is a definite help from each other. For example, crops and livestock are frequently mutually complementary, as crops may provide fodder for the livestock and the livestock, in turn, may furnish manures and nutrients for the crops. Similarly, legumes help to bring up the soil for the production of other crops in rotation and, in turn, receive protection from small grains when used as a nurse crop. It is, however, not possible to subject these relationships to exact measurement, but these must be given proper consideration when determining what operations to include in a farming system in order that the maximum returns may be secured. Incidentally, it may be stated that the complementary enterprises do constitute the chief economic reason for diversified farming. Farming is mainly a part time job, in the sense that the peasant has not to be busy all the year round. He enjoys what may be termed *gaps* and *recesses* between the various crops. The complementary operations are *intensive* operations which put the farmer to hard work and get the best out of his time, resources, labour, land and equipment. These operations may be

recommended especially in the overpopulated countries where farming has become an overcrowded profession. They are also recommended where soil is on the verge of exhaustion, and where the need for integration and complementarity is supreme. These operations are simultaneous in character; they can be undertaken all at the same time. This analysis need not imply that the more conscientious peasant is one who is best equipped by virtue of his wider mental horizon and better training, would undertake the complementary operations on his farm; the backward peasant may also be practising cultivation and cattle raising all at the same time because one helps the other. Thus these operations are not strictly confined to the advanced economy, we find them in backward regions, too.

Summing up. To sum up the above discussion on the true classification of these operations, we may point out that in the use of the competitive ones, although more intensive efforts may be required when the operation is under way it is the supplementary ones that provide more durable employment to the peasant and his family. The competitive operations mean specialised tasks, to the exclusion of the other related jobs. They are possible only in spare-time farming and in that system of farming which is undertaken for the sake of a hobby. In the case of whole-time farming operations, the competitive jobs hardly find any place. Similarly, in self sufficient farming or family farm enterprises it is the supplementary operations that would be better placed than and preferred to, the competitive ones, which mean intensive work for some time and a holiday after that. The advantage of supplementary enterprises lies in the fact that they make farming a continuous job, and provide whole-time employment to the peasant and his family. This point needs special consideration, especially in backward regions, where over-crowding on land is high and the pressure of population excessive; supplementary operations, if carefully planned, will certainly go far to remove the twin evils of under-employment and unemployment, which dominate the countryside very much. Complementary operations are useful in those regions where the drive for agricultural output needs to be intensified. These operations take the best out of land, for several enterprises are simultaneously started and mixed farming is practised. The supplementary and the complementary enterprises in the sphere of agriculture have resulted in, what is described as mixed and diversified farming, to which we shall allude separately.

Routine or Sequence Operations. Talking next of the routine operations, we find that they are of four types, *planning, preparatory, substantive* and *subsequent* operations. The first two relate to preliminary stages of agricultural enterprises, while the latter two are related to the actual operations. These operations are undertaken in a definite order, with reference to a major enterprise. Not that all these operations are only concerned with the major operations, say dairy-farming, but that they fix up the places where the minor operations, say fodder cultivation may be placed in the farmer's

time-table. *First* come the preparatory operations which are undertaken as a preparation to the main and major farming enterprises, then the enterprise itself attracts the farmer's attention, and last follow the subsequent operations which may be necessary in the winding up stage. For a conscientious farmer, however, the planning stage also appears to be an indispensable one. He must look ahead of times and understand very correctly what are the various punctuations in the farming routine. We shall study these operations one by one and see how this classification stands, when tested on the touchstone of economic analysis. The sequence analysis, as we have chosen to describe this particular division of agricultural operation, is significant because it provides us with a clue to the timing of the farming operations. While the above classification was mainly related to the simultaneity or otherwise of crops and other jobs, this classification concerns itself with the routine of the crop. Needless to point out, that even in a competitive operation, some sort of time and sequence adjustments need be introduced, some planning and preparation may be necessary for undertaking a specialised job, while certain follow up job or operations may be indispensable before the next main job can be undertaken. Similarly, in supplementary operations, the same routine may have to be followed while in the complementary ones the same preparation may hold good for the various jobs and farming adds.

Planning Operations Though not very apparent in actual life, planning stage is an important pre requisite to the main agricultural production. It does not necessarily mean that every farmer sits down with pen and paper and chalks out, as if he were an academician or an administrator, a complete programme of the various agricultural operations and the manner in which they could be integrated into one another, but it only implies that even the most conservative, superstitious and unintelligent peasant does take mental notes of the routine that he has to follow and the implications of the same. Every peasant plans, though these plans may differ in regard to preciseness and detail. Planning is an important pre requisite of all agricultural operations, excepting when these operations become traditional and are reduced to an unintelligent routine governed by custom and superstition. The planning operations may also remain largely 'invisible', for the simple reason that the farmer may undertake them in the off season or while he is not at work and may not apparently devote much of his time to the planning stage. Still it must be conceded that if planning is wise and detailed, the pitfalls which may arise in the pursuit of agricultural operations (and there are slips for obvious reasons), may be avoided or even eliminated. While planning his routine, the agriculturist takes stock of all his resources, human and material, present and potential, and the various uses to which they can be put and the different ways in which they can be employed. Although conspicuous by its absence in the primitive and under developed economy, (where agriculture has been

reduced to a mode of living and has become already a superstitious routine), the planning stage still occupies an important place in the transitional and the advanced economies where either the planning authority, or even the individual farmer thinks, ahead of the active operations, with a view to maximising the output, improving their efficiency and eliminating all avoidable wastes.

Preparatory Operations. Next rank the preparatory operations which are in the nature of *preparation* for the main agricultural enterprise. These operations are quite "visible", very pronounced and prominently placed in every agriculturist's routine. In cultivation, they refer to the pre-sowing period; in cattle ranching, they refer to the breeding stage; in dairy farming they refer to the selection of the milch cattle and their anticipated yield; in horticulture they refer to the planting stage; in short these operations are very essential to the success of the main pursuits. Agriculture is a complicated job and one which requires careful understanding of all the stages of production. Farmers must know what type of preparation is necessary for the productivity of a certain crop, or better yield of a certain breed, or better productivity from certain plantations. In plantations, for example, these operations are undertaken at each season, spraying the plants against the onslaughts of pests and insects is of the nature of a preparatory operation. Similarly, treating the milch cows against certain diseases is also of a similar character. A judicious selection of these preparatory pursuits enables a farmer not only to increase his productivity and improve his efficiency but also to eliminate waste or at least reduce it considerably. These operations are not peculiar to the more advanced among the farmers, who may be better equipped with scientific knowledge and thus be in a stronger position to effectively carry out these operations, but they are also common among peasants in the backward regions who do not have either equipment or knowledge, but still do some preparatory works even though of a crude and elementary type for successful farming. Much of the farming efficiency depends, it is admitted on all hands, on the wise and correct selection of the preparatory pursuits which can strengthen not only the major jobs but also the contributory and minor ones, which in turn may prove to be of an essentially complementary nature.

Substantive Operations. The substantive operations are those which are the main jobs in the agricultural pursuit. For example, dairy farming may be a *substantive* operation, if the farm is of such a type that greater attention is paid to this pursuit. Similarly, sheep farming may become a substantive operation if the purpose of agriculture, in so far as the peasant is concerned, is that of wool raising. Substantive operations are the major ones, and are those for which the preparatory and the planning stages have been the essential preliminaries. In cultivation, for example, while the pre-sowing period may be regarded as the preparatory stage, the actual

seeding, winnowing, harvesting and threshings can be regarded as the substantive operations. It is not possible to draw a hard and fast line between the preparatory and the substantive pursuits, for the simple reason that the former shade into the latter. A line could, however, be drawn between the planning and the preparatory jobs in the sense that the former relate only to the paper stage and are therefore, 'invisible' while the latter are actual tillage or agricultural pursuits, which are quite 'visible'. A similar differentiation is not possible between the preparatory and the substantive operations. It may not be possible to tell where the preparatory ones end and where the substantive ones begin. Nor is there any use of such a differentiation. Suffice it to say that the substantive operations need more of a farmer's attention and require a lot more of his labour. They are whole-time operations, even for those engaged in spare-time farming. It is quite possible that one substantive pursuit may be undertaken when another preparatory one is being attended to for another agricultural job. The raising of fodder crops though by itself a substantive operation, if viewed from the angle of cultivation, may turn out to be only a preparatory and preliminary job for cattle ranching. This often happens in the case of supplementary operations where one operation is anticipatory (and preparatory) to the other.

Subsequent or Follow up Operations These operations are usually lightly treated and given an insignificant place in discussions of Agricultural Economics. But much insignificance need not attach to these pursuits. In the competitive crops, for example, the soil often gets so exhausted that *follow up* operations become necessary. In the supplementary pursuits, too, one operation is merely of the nature of a subsequent operation though in itself preparatory to another. Weeding, cleansing and other similar operations are only subsequent to certain substantive ones. If wisely undertaken, and correctly timed, they are useful because they retain soil fertility and do not let agriculture suffer. Calving, for example, may be subsequent to breeding, though preparatory to milking and dairying. These operations are also indistinguishable from the preparatory ones as is clear from the examples just cited. But, in complementary pursuits, for instance, in mixed cropping and diversified farming, the subsequent operations occupy a fairly important place because they are essential for the correct disposal of the crops. In this sense, the marketing assignments are also of a subsequent nature, and the follow up ones, the major cultivation programmes. But, appropriately speaking, it is the storage of the harvest that can be regarded as a follow up operation to the main agricultural process. Certain processing jobs can also be regarded as subsequent operations, *subsequent*, but *essential*, to the main pursuit. For instance, the processing of mutton is essential to beef farming though a subsequent one in itself. Examples may be multiplied of similar situations. It need only be pointed out here that the chain of agricultural pursuits remains incomplete if the subsequent

operations or the follow-up jobs are not adhered to. Usually, it so happens that the whole agricultural job may become unremunerative simply because there has not been a correct follow-up of the main pursuit either by the farmer or his "staff" who get rather exhausted and tired out by having been over-taxed by the substantive operations.

Major, Minor and Subsidiary Operations. Agricultural entrepreneur may look at his operations from yet another angle. He may classify them as *major*, *minor* and *subsidiary* ones. The major operations are the main operations, to which the peasant devotes all his attention: say cattle-ranching, or cultivation. The major operations occupy most of the farmer's attention, resources and equipment. They are what the purpose of farming is, or on what the peasant lays the emphasis. All the other operations are only of a secondary nature, and have not the same place of prominence as the major ones. All the form work is only subservient to the accomplishment of the major operations. In the competitive operations the crop selected is the major crop, while in the supplementary ones the major crops would be those which require his greater attention and which utilise his larger resources. The minor operations are only of an incidental nature to the major ones. For example, the dairy-farming operations may be described as the major one, while that of fodder and feed-growing would be only a minor one, which is incidental to the main operation of the farm. Similarly, while cattle-ranching may be a major operation, that of hay-stacking would then be the minor one. These minor operations do not, in any way, conflict with the major ones: in fact they are only feeding the major ones, and are complementary to them. The third type of operations, namely, the subsidiary ones are those that are derived from the major operations. For example, in the case of cattle-ranching, the meat-packing operations are only subsidiary to the main operation of the farm. They are also of a complementary nature and complete the main operation. A correct fusion of all these operations is what is to be desired for the success and efficiency of the farming enterprises. This classification lays stress on the "linkage" character of the farming operations and may not be of great importance from the purely analytical point of view, but have been mentioned simply because in the main body of this dissertation, we shall have occasion to refer to all these and an acquaintance with this classification is a pre-requisite to the understanding of the problems and issues in the agricultural operations. This particular grouping need not be understood as being an improvement on the earlier classifications.

Productive, Unproductive and Wasteful Operations. One more classification, and we have finished. Agricultural operations may be viewed from the "productive" angle and may be classified as being *productive*, *unproductive* and *wasteful* opera-

tions The productive ones are those that result in some concrete production on the farm, as for example, sheep-farming, crop-growing and horticulture All these operations, (that is to say all the operations that are usually in the peasant's time-table), are the productive ones. The wise farmer only takes up the productive operations and does not waste either his resources or his time on the unproductive or the wasteful ones All the supplementary, competitive and complementary ones are to be included in the list of the productive operations The unproductive operations may include either the directly productive or the indirectly (remotely) productive enterprises In the former category may be listed the cultivational tasks, while in the latter category would be included the jobs relating to drainage or irrigation All those jobs, (and there are many such odds), that are aimed at improving the business of farming could be described as productive, directly speaking and remotely speaking There are also unproductive tasks that the peasant has sometimes to undertake in the course of his business For example, most of his social obligations that he has to discharge are *unproductive* Even his private duties, relating to his family, as for example, the building of his homestead, is also not productive from the strictly agricultural point of view, although these jobs must also need be undertaken But the construction of a storehouse could not be regarded as an unproductive work, for this is an essential job from the farming angle The wasteful enterprises are also a part of the peasant's life, especially in the backward region For instance, in these communities, litigation and other similar preoccupations are of a wasteful nature A good farmer would aim at the elimination of the wasteful operations, and the multiplication and the intensification of the productive operations, while he would colour his life with leisurely and recreational pursuits which, in the light of the above classification, could be placed under the group "unproductive" The unproductive operations may be essential in order that the peasant may live fulsome life

Farm Cultivation Cultivation is easily the most important of the agricultural pursuits In fact, it would be incorrect to say that agriculture is synonymous with anything but cultivation and growing of crops Tillage, as agriculture is often described, is the main occupation of the rural population Cultivation, in the broader sense, may include the growing of crops and also the plantations, though as pointed out above, the plantations are not a little different from crop-growing, which are annual and seasonal operations In the matter of crops-selection, the peasant will be guided by the principle of choice He shall take into consideration what crops would yield him greatest value per acre But this is not the only isolated factor that he must consider, he shall be guided by the cost price ratios, what investment will bring forth what production, and what revenues. A conscientious farmer will also be mindful of the natural

limitations of his lands and soils, for the most remunerative crops may not admit of cultivation on that land, and therefore, may have to be ruled out of all practical considerations. Theoretically speaking, the crops that require the same amount of labour and equipment may be compared on this basis. Again, only those costs and returns which are affected by choice, need to be considered and not all the various costs and returns. Such crops may be compared on the basis of the net profits per acre. Further comparison may be done when the differences in costs and returns are known, for the common items of costs-labour, rent hire charges, etc., etc., may cancel each other and need not bother the peasant in his calculations. Comparison is thus facilitated, and the farmer acquainted with labour and material requirement is able to compare the prices and yields of the crops. Added to the above is the general pattern of the farming routine, into which the crops under selection should fit in. If, for the sake of fitting in a certain crop, anticipated to be very remunerative and profitable, the peasant has to disturb his whole programme of agricultural production, he would not like to go out of the way to select that crop, for the reasons noted above. And then the major crops have also a preference over the minor ones, which can be sacrificed in the interests of the major ones. Most of the farming today is diversified farming and not the cultivation of isolated crops; but more of this later.

CHOICE OF CROPS

In all these calculations, various bases for comparison may be used; for instance, the net return per man-hour may be one basis. This basis may be used where the crops under selection require more labour and more intensive work provided the crops under consideration, conflict at all stages and call for the same type of intensive work. But when a larger amount of labour is demanded on one crop at a time when there is no demand for labour on another crop, (that is to say, the two crops are in rotation), a serious difficulty is introduced in comparisons. No allowance is made for minor enterprises and calculation becomes all the more difficult. The use of profits per acre, as multiplied by the number of acres that a man may be able to work upon efficiently, is another basis for comparing the relative profitability of crops. But this method, too, is open to objection on the ground that no allowance is made for the interdependence of crops as between themselves. Therefore, it becomes all the more necessary to compare profits arising from a single major and competitive crop with those arising out of mixed cropping. But again, the effect of each cropping system upon the maintenance of soil fertility is also an important factor to be reckoned with in these calculations. The selection of cropping enterprises is dependent upon the nature and character of the soil, the limits of the peasants' resources and the equipment that he can utilise for these operations. Crop selection is the resultant of all these factors and forces that operate in the farmer's calculations and are

operative on the farm. We may, therefore, conclude that there could be no single method of arriving at the best possible selection nor any rule-of-thumb to guide the peasant, howsoever calculating, conscientious or enlightened his approach to this particular problem may appear to be. It is only where a number of cropping operations require approximately the same amount of labour and equipment at the same times of the year and fill essentially the same place in his programmes, that the problem gets rather simplified. But where the two conflict and the increase of the one is only possible at the cost of the other, various factors, forces and considerations outlined above, could at best be only an aid to passing more correct and balanced judgment. To sum up, the problem of crop-selection is a complicated one.

Specialised Farming Turning our attention to a description of the various farming systems, we find that there are as many as three categories *specialised*, *diversified* and *mixed*. This classification stresses the production aspect of cultivation. We shall have occasion to refer to another classification below from the strictly economic point of view. Needless to discuss the relative merits of the two systems of classification the relative advantages would be evident as the argument develops. We shall take up first classification first. Turning our attention to this, we find that specialised farming is not the rule in agriculture. Specialised farms may be devoted to the growing of a single crop, e.g. potato, cotton or wheat, etc. These farms may be of the peasant proprietor type or may even be under joint management. Crops may come in rotation, but the fact remains that farming is devoted to one crop at one time or in one harvesting season. Mostly, the farm, or the unit of farming, is the large scale, for if it be the small scale, it would be not so remunerative even to provide subsistence to a single family, but no hard and fast rules can be laid down, nor any generalisations made. The crop that is selected for tillage is the one that is most paying from the point of view of remuneration, and consistent with the limitations imposed by natural and physical factors. It is possible that the soil may be of a specific nature and may not permit of any other type of cultivation. In that case it would not be possible to bring about any shifts in croppage. Once planned, the remaining operations follow, without much bother to the peasant. Attention is only to be devoted to one crop and not to many. The advantages of expert knowledge accrue both to the peasant and the produce. Better concentration is possible and the specialised type of machinery could be employed for cropping and the follow up processes. Emphasis could also be laid on the improvement of the quality of the produce, and if it is a large farm, there could also be scope for experimentation and research. But there is the seamy side, too, the total dependence of the peasant on one single crop might mean his utter ruin in times of some natural calamity, or the prevalence of a disease in the crop, or in the event

of a fall of price of that particular crop. Probably that is why "mixed farming" is in vogue these days.

Mixed Farming. By this type of farming, the farmer puts his eggs in as many baskets as possible. He does not cultivate only one crop, but grows on the same plot of land as many crops as he can. This may be done by resorting to methods of supplementary cropping, or more usually, complementary crops. Even if one crop fails the peasant can depend on the other farm products and crops. Several benefits accrue from this practice. Full use is made of the soil and the completest possible assortment of crops is cultivated by the peasant. Mostly these are complementary crops that are grown or the crops that are nearly simultaneously grown, even if they be of the supplementary type. The problem that faces the farmer is to find out the most profitable crop-combination, consistent with the technical possibilities of cultivation. The principle of *comparative advantage* may be followed. Comparisons will have to be two-fold: the relative advantage of crop-combination in the same region and the relative advantage of the products in the competing area. True, comparative advantage is indeterminate, until these two sets of relative advantages are compared with each other to calculate in which the ratio of advantage is the greater for the particular crop-combinations. There are other determinants, too, the resources of the peasant, the availability of resources and the outlook of the farmer, as also soil conditions. It seldom happens that the particular farm has such a clear advantage that the other farms may remain out of competition. Again, the quantitative aspect must also be taken into consideration, for the wise calculating farmer must make an intelligent estimate of the quantity of each crop to be produced. It is especially true of mixed farming crops, which go in rotation. The complementary, supplementary, joint-product relationships as between products and operations must be weighed, in addition to the usual well-known considerations of climate, soil, distance from the market, labour supply and managerial and entrepreneurial skill. The comparative advantage may be calculated in terms of gross return per acre, net cash return per acre, net cash returns per man-hour, or net returns on the business.

Diversified Farming. The system, "diversified" farming, is said to obtain when the farmer gets his income mostly from two or more crops or operations. The most advantageous operations are combined with cultivation, in order to maximise the income of the peasant. Certain advantages are expected from the diversified system of farming. A longer time of employment is there: labour, equipment and even land are more fully utilised and more completely employed. Also, the fertility of the soil is better kept in balance, if instead of one crop or operation, two or three crops are grown in succession or two or more operations are undertaken one after the other. We saw in the second chapter (Modern Farming), that certain crops in a certain order in rotation

would serve to improve the soil structure and the productive capacity. Legumes, for instance, transfer atmospheric nitrogen from the air to the soil. Similarly close-growing forage crops reduce erosion and add much needed organic matter when they are ploughed under. Certain crops may also be regarded as "companion crops", for example, the oats and alfalfa. These crops fall under the category of "complementary" crops. More certain sources of income are secured if the farmer resorts to diversified farming dependence on a single crop is reduced. Many farms have a variety of types of land and soil conditions which are better utilised if several crops are grown, each best adapted to a particular soil. A part of the soil may be dry and the other part may be well irrigated, both the types could be utilised if diversified farming were the rule and the practice. Some farms can raise two or more crops a year on the same land and the advantage of diversified system is very obvious. Diversified farming may also mean some losses, in that the farmer's attention may be diverted into many channels, without concentration in any single one, the result may be that all the different cultivational operations may suffer, unless the peasant is experienced and able to manage diversification in agriculture and cultivation. Multiple-crop farming is thus preferred to single-crop farming, or even to single-harvest cultivation, on a mixed type. Diversification may also be there in point of location this means that there is a greater locational spread in this business, farming is not concentrated in one place.

Multiple Farming. Closely connected with the above is *multiple farming*, which needs be distinguished from the diversified type. While the latter relates to either the diversification of farming (adverted to in the last paragraph), or to the diversification of the cultivational operations, as for example, many crops raised on the same farm, or many crop-combinations on the farm, the former describes that system of farming that has on it several agricultural operations, like cultivation, stock breeding and horticultural operations, all combined on the same farm. This type may also be termed as "combined" farming. Several combinations of different agricultural operations may be thought out, feed and livestock farming, crop and livestock farming, crop-feed livestock farming, vegetable-crop-feed livestock farming, and vegetable-fruit crop-livestock farming etc, etc. The advantages are similar to those arising from diversified and mixed system, though on a very much extended scale. Widest possible employment is thus afforded to the farmer, who may also combine certain subsidiary operations to the main farming and dairying operations. On family farms, and especially in the case of those who have a large number of dependants to support, multiple-farming is the most appropriate system in vogue, for it provides an opportunity for extended employment to nearly all the members, and avoids over-crowding on the farm, and also continuous jobs, well integrated and well knit as

between themselves. Even under subsistence farming, the adoption of multiple farming will go far to help the peasant in affording him several avenues of remunerative occupations; and thus may inflate his income, provide him with another string to the bow, and invest him with more stable sources of revenue. But, it may be pointed out that it requires extra-hard effort and energetic input on the part of the peasant that multiple farming could be successful and also remunerative enough to compensate him for labour put in. A certain amount of judicious selection of the various operations is also an essential prerequisite to the practice of multiple-farming. The most remunerative combinations have to be chosen and then wisely put through. On the other hand, if a slight mistake is made either in the choice of operational combinations, or in the methods of their implementation, the peasant will find all his work a failure, and his input wasted.

Subsistence and Family Farming. Another way of looking at the same problem of farming and cultivation is that from the point of view of income. We have a classification; *subsistence*, *family* and *surplus* farming. Though not strictly related only to agriculture, (for in these types, multiple and diversified farming may be the usual practice), still, simply because of the fact that we shall have to refer to these types of farms time and again, it is proper that we understand what these terms connote, without trying to implicate ourselves in the problems attendant thereupon. *Subsistence* farming is mainly concerned with providing food and shelter to the cultivator and does not give him anything more than bare and very essential necessities of life. This is usually practised in the backward economies or even in the transitional economies, where the pressure of population is high and the availability of land rather low. The resources of the farmer are quite meagre and he is unable to afford the improved technique of farming. Usually this type of farming is tenant-cultivation with the prevalence of rack-renting. An improvement on this system is that of family farming, which is the next stage of agricultural evolution, brought about by a welfare state conscious of the good of agriculturists. To each family is given land sufficient to ensure to them living at a modest level. Often, these units are indivisible, and the farmer, with resources, larger than the subsistence cultivator, resorts to multiple cultivation, in his search for maximised income and fuller employment. Thus peasantry is a little better off than in the case of subsistence cultivation, when they are just on the level of bare subsistence and can ill-afford to effect any improvement on the farms. Then there is the category of surplus farming, under which the cultivator has a disposable and marketable surplus, though it may not be large enough. Farming may tend to become a little more specialised; it may be the stage of mixed farming as described above. And the last stage is "commercial". Production and cultivation are carried on only for the sake of marketing and the

system may become highly specialised and scientific. The unit of agriculture may also tend to enlarge. In most of the advanced countries, this type is prevalent.

Modern Mechanised Farming. The above description would remain incomplete if we did not recapitulate the main trends in modern cultivation and did not make a mention of modern mechanised cultivation. The modern system of cultivation is not the subsistence type, it is surplus and commercial farming, with a view to producing for the whole community and the market, and not for the self or the family. As detailed above, in the chapter on *Modern Farming*, the present day farming is undertaken on scientific lines and farm-management has already become a specialised subject of study and practice. Under "free economies", the large estates are being broken up and the system of peasant cultivation is being encouraged, in order to promote mixed and multiple farming and to widen employment opportunities, in the country-side. In the regimented economies, however, larger units of cultivation is still the rule and cultivation of a specialised nature, for often the economy is so much planned and co-ordinated that the problem of fighting the menace of unemployment in the rural regions does not very much bother the state. But, leaving aside the primitive and backward countries, the trend is towards mechanised and scientific farming. From the above discussion, on the economics of cultivation, it is clear that, in view of the advantages accruing from the systems of multiple and mixed and diversified cultivation, these systems are coming into vogue. Agricultural cultivation is getting more and more diversified, if only to reap the largest harvest out of the soil. The ends in the sphere of cultivation are no longer to provide subsistence either to the farming community or to the nation at large, but the wider interest of stabilising the economy and providing the fullest possible opportunity for the diffusion of employment is what the agricultural policy of an enlightened state aims at, and cultivation is made subservient to this end. In the light of this, the natural consequence would be the change brought about in the complexion of agricultural tillage. In short, it would be correct to say that subsistence farming is disappearing and yielding to family farming in the backward regions, while multiple and diversified systems of tillage are being adopted alongside, in the advanced regions the trend is towards commercialised farming and specialised cultivation is being adopted.

Plantations. Plantations are similarly situated as the ordinary crops are. And similar categorisation may be done in this, too. From the standpoint of the agriculturist the main difference is in the life-span. A fruit tree does not come into bearing for a few years after it is planted, its yields are rather low at first, then they rise to the maximum, stay there for some time and later on decline until the tree is dead or is removed. Fruit and nut-growing are truly long-range enterprises, each tree going through a life cycle

resembling that of a man. Climatic requirements are more rigid in the case of the fruits than for any other crop. Apples could only be grown in certain climates and soils. Fruit farms are truly specialised farms. But there are certain good points, too. They utilise but very little land and, comparatively speaking, are very productive. But they have a high investment per acre, both in terms of money and waiting. Again, the fruit farms have very little livestock requirements; they have usually a cow or two for the needs of the farmer-planter. Fruit farms, even the smaller ones, hire relatively larger man-power: their labour requirements are comparatively high. At the time of harvesting, a great deal of hand labour is needed, though for a short time. A similar cultivation-farmer may well be self-sufficient, though the fruit farm may need a dozen helpers. And there is very little prospect of mechanisation in the field of horticulture. Spraying, pruning, thinning and picking, all these operations require hand labour, which is usually engaged on piece-work basis. Similarly, in tea and sugar plantations, the requirements with regard to labour, usually, are inadequate; the way in which forced labour was recruited by the European planters for their plantations is notorious for the harshness of the measures adopted by them. In the plantations, the supplementary crops do not very much thrive. The problems are also not a little different from those of the cultivation farm; the fertilisers have to be selected with an eye to their specific use for the particular plant. Also, adjustment in regard to the price-cost ratios is rather difficult to be attained, for in the periods of remunerative prices, if the plants are grown, they may fruit only when the lower prices prevail; sound judgment is very essential.

Vegetable Farming. Crops similar to fruit crops are vegetables. Such farms offer a wider assortment of species than the fruit farms. Part of the vegetable farms grow only one or two varieties, but others grow a larger variety of vegetables. It is mostly mixed farming that they practise on these farms. The purpose behind this practice is that peasants want that some produce keeps going to the market. Also, many more farms grow vegetables for home use than grow fruit; vegetable gardens attached to family-residence are very common. Of course, it is the easier and better variety of the vegetables that are grown on family gardens. But such crops are not very important from the economic point of view, for obvious reasons. These vegetable farms can also shift from one type of production to another rather quickly. New areas come into production soon enough, and the older ones are also displaced in the same manner. Similarly, there are shifts both in regard to location and production. Another characteristic is that they are not large-scale farms. They tend to be located near cities and other urban areas, or on lands of high economic capacity if not natural fertility. Vegetable-gardening, as this form of cultivation is known, is also maintained at a high level of tilth and fertility.

These farms also hire a lot of labour, if production is undertaken for the market. Both the growing and picking of vegetables require much hand labour, these farms may be popularised in over-populated regions, for they will tend to ease the pressure of population by providing wider employment. Especially, harvesting is a hand operation. These farms have relatively small acreage and, therefore, are intensively operated with much labour and materials combined with a small area of land. The decisions in regard to selection and sequence of crops are very much subject to climatic and seasonal hazards. To bring the produce to the market at the right time also requires careful planning. Diseases and pests are very serious problems on the vegetable farms. Varieties and production practices change frequently, so the successful grower must be constantly on the alert. The marketing problem is also acute for the vegetables are highly perishable goods, they seem to have only a market valuation. The problems of storage and processing face the distant and out-of-the-way grower. Grading, and packaging are also other issues.

LIVESTOCK

Livestock is an important accessory for the cultivator. Even for the ordinary peasant farmer, livestock provides the power necessary for the common cultivations, while the cows and buffaloes yield milk for the family. Meat and other animal products are also useful to the peasant. In the purely agricultural operations, the farmer receives the valuable farmyard manure to provide nourishment to the soil. In the backward countries, particularly, cattle are an important source of assistance to the peasant, they carry his produce to the market, help him in ploughing, and other farm operations, and also give him food. But in the developed economies, too, cattle are a useful adjunct to the farming routine, for haulage and food purposes. Cattle are, therefore, important in all economic systems, even though modern machinery has tended to replace them to a large extent. There may be livestock farms of a very specialised nature, or feed and livestock farms, or crop-and-livestock farms. We shall discuss, in rather details, the different characteristics of each, after we have discussed the basis of selection of the live-stock farming, from the theoretical point of view. The cattle have twin advantages, they convert their feed into useful food and energy so essential for the farmer. Broadly speaking, dairy farming, poultry farming, sheep-farming, cattle-ranching, are all to be included in this category of "cattle farming." Thus cattle produces are not only confined to milk and other dairy products, but also to wool, eggs, chicken, fat, lard, hides, leather, bonemeal, mutton, beef and other similar produce. Needless to point out that cattle are an important asset to the economy if wisely used, but if not correctly used, they may prove to be an evil and a burden, consuming away the vital resources of the economy, as in the case of India, which has the largest number of cattle, but the lowest amount of dairy-products, niggardly quantum of leather production, and negligible production

of meat and mutton. One advantage with cattle is that these would nearly always fit in any climate in which man could live, also the soil limitations do not matter seriously for the cattle farm. Feed and fodder crops could as well fit in with the rotation of crops.

Choice of Livestock. Different classes of livestock use different kinds and amount of labour, feed, pasture and other resources. Beef and dairy cattle consume a greater variety of fodder than do pigs. This "industry" comes into competition with the production of crops. Time has to be distributed between crops and the cattle. And then, initially speaking, the peasant, especially the one who wants to go in for the specialised type of cattle farming, has to incur rather heavier costs than the one who is to be engaged on the ordinary cultivation. This is an important consideration in the field of cattle farming. The objective in the selection of livestock enterprises is to secure the most profitable utilization of home-grown feed, pasture, and labour, in order to maximise his margin of profits, over a number of years, for the life-span of animals chosen. In case this industry is "supplementary", and the farmer has not to spend any extra-time and resources on this, he has only to decide whether the additions to his total net returns resulting from the transformation of the various crops into animal products are enough to compensate him for extra efforts, energy, time and capital invested. But if the livestock industry encroaches upon resources, material and human, required for crop production (that is, when the two are "competitive"), the problem is that of deciding whether he should concentrate on his cultivation and sell his crops or convert them into animal products for purposes of marketing. The problem is similar to that of selecting the crops, and the clue is provided by identical principles. Another consideration is that the yields on stock farms are usually higher than on grain farms or equally good farms of equivalent fertility. Again, in deciding upon whether he should keep cattle, pigs, sheep, or a combination of them is determined by the kind of feed at his disposal, the relative prices he can secure for the different classes of livestock products, the way in which the resources on it can be utilized, and the limits imposed thereby. The personal likes and dislikes of the farmer also matter in determining his choice. To sum up, expenses and income alone do matter in the selection of cattle enterprises, by products and their utilization *vis-a-vis* these enterprises are an important consideration, too.

Different Types of Cattle Farms. Let us now enumerate different types of cattle enterprises. Firstly are *specialised* livestock farms, which specialise in one or two cattle enterprises. The special advantage lies in the fact of their specialisation, like mutton or beef, etc. In this category are included dairy-farming, poultry farming, cattle ranching and sheep farming. Various considerations do vary with each enterprise, and depend upon the nature and character of the same. In dairy-farming, for instance, the

chief factors to be considered are the milk yield of cattle, their milking period and breeding potential. In sheep farming, the peasant shall exclude all considerations of mutton yield of the sheep, but will concentrate upon the wool bearing *marino* type. Similarly, in the sphere of poultry farming, the main considerations will be that of egg and chicken production and provision will have to be made for better productivity in this respect. In cattle ranching, considerations governing the enterprise would concern themselves with greater meat and mutton production and the follow-up industries related thereto. Next, we underline the main characteristics of the feed and livestock farms. The main problems concern themselves with the production of the feed, fodder and pasture crop with a view to providing the same for cattle, on a self-sufficient basis. Controlled grazing, adequate fencing, supplementary forage crops, improving the mixture of pasture crops and contour ridging of pastures on slopes to collect water and prevent erosion are some of the problems that face the farmer. Analysing the factors underlying crop-livestock operations, we find that this type combines significant amounts of cash crop and livestock production. This has the advantages of a fuller employment of land, labour and equipment, stability of income and lessening of the disease hazards. But there are also some demerits of the system, exceptionally unusual skill is called for in this type of enterprise and then the marketable surplus may be too meagre to be remunerative. But the flexibility of farm enterprise and possibility of its adjustment to the vicissitudes of weather and market, is an overwhelming benefit arising out of this mixed operation. In short, this particular variety of farming is most remunerative.

Marketing Next in importance rank marketing operations. Since the days of subsistence farming are now over, and farming, mostly on a surplus level, the produce being disposed of in a suitable market, these operations have become well nigh significant. These markets may be local, regional and national, or the other grouping may be primary, secondary and final markets. Different produce is grown for local markets, only the perishables would be consumed there without loss of value, e.g. vegetables. But for the regional markets, the productive efforts of the farmer may be diverted into rather different channels, he may produce those commodities that may have a greater durability, e.g. fruit, meat, cereals, etc. But the national and distant markets may influence the farming activity in a different manner, he may produce goods of a standardised variety and may resort to grading, etc. With the development of means of communication and transport, however, the farmer has become better equipped to dispose of even the perishable produce in distant markets. At the same time, storage facilities are being extended by the national state agencies, and this also goes to improve the marketability of his goods. Still, the process of adjustment of the farm produce to the changing

market conditions is rather a complicated phenomena, and often mistakes are made and the process of adjustment gets rather difficult. Coming to the second classification, we find that the *primary* markets relate to that elementary stage where the farmer markets his produce. It may be said to exist in the village, where the peasant has often to dispose of his produce to the local money-lender, or where the *Arhatia* (the whole-saler's agent) or the petty-stockist may purchase his crops, harvested or standing. The *secondary* stage in this business of marketing comes when the petty dealer in the village, shopkeeper-cum-moneylender, resells the produce in a bigger urban market or to the wholesaler; in this the farmer seldom enters, it is only rarely that the ignorant and poor peasant bothers himself to the regional markets. The final stage may be said to have set in when the same produce, raw or in a processed state, is sold to the final consumers either direct by the wholesaler (as to the factory owners or to the foreign dealers) or through the agencies of the retailers. In the *first* stage, marketing concerns itself with procurement, in the *second* stage, to stocking, and in the *final*, to retailing.

Miscellaneous. Under this heading, we group several agricultural operations, mainly of an *indirect* nature. This may include keeping of farm account and records, book-keeping and inventories, surveys and returns; all these have to be maintained by the peasant who aims at scientific management of his farm. The peasant has to be extra-vigilant, if only because of the complicated nature of his enterprise and the way it depends on the inclemencies of weather. He need analyse his cost-return accounts and records in order to discover the trends in his business and sample surveys may have to be conducted in order to arrive at quick conclusions and decisions; these are mostly conducted with the aid of expert agencies. A good system of records would go far to indicate the main trends in the farm revenues: these records may be in respect of his farms, livestock, pasture and labour, and, above all, his revenue returns. Operating statements may be necessary for clarity of understanding and for correct analysis of the situation: these statements may relate to various transactions on the farm, to expenditure and receipts, to various inventories and above all to operating costs and net worth. Other similar activities may concern them with activities related to the financing of agriculture, securing that finance at the cheapest rates and from the best agencies. The valuation of farm properties is a connected operation: he shall have an appraisal of the market value, the loan value and, finally, arrive at the true assessed value of the farm, livestock, orchards and feed. Selecting a farm may also be put in this group; this may involve him in a study of the real-estate market with a view to knowing the farm prices. He shall also take the various factors into consideration, for example, oils, topography and climate, as also the problem of location. But with most farmers, their farms are hereditary. The planning of

buildings, residential and farm, and carrying out the farm soil surveys, are also allied activities. In addition to all this the farmer must also know how to secure, to the best of his advantage, the fullest assistance from the state, public and voluntary agencies, make use of the latest in the technique of agriculture and its research, utilise information relating to his business, and above all, to plan his work within the frame work of law.

SUMMARY AND CONCLUSIONS

In this chapter we discussed the various aspects of agricultural operations. In the preliminary section, we saw how the principle of choice works out in practice, and in what manner the adjustment of cost price relationships is carried out in the sphere of agriculture. The agricultural operations were grouped under various headings, the more important ones being competitive, supplementary and complementary, and the planning, preliminary, substantive and subsequent operations. We discussed each one in rather details. Next, we discovered how this principle of choice applies in the spheres of farming and cattle-operations. Farming and cultivation were dealt with under various headings and groups. In livestock farming we outlined the various types of the same. Marketing operations and the miscellaneous ones were also given a descriptive treatment in this chapter. Under the heading, "miscellaneous", several allied operations were outlined, and these may well be regarded as essential to the success of agriculture. One thing that needs be stressed here is the personal factor in the business of the agriculturist, i.e. his personal likes and dislikes, aptitudes and sentiments. The agriculturist's personality is of paramount importance to the nature, character and type of his pursuits. An enlightened farmer will take to agriculture in a very scientific manner, and would deal with every problem on its merits. But, on the other hand, a conservative, superstitious and ignorant peasant would only be content with carrying on his pursuit in the traditional manner, without weighing the pros and cons of the issues that face him from time to time. That is why, in this concluding section, we have set forth in rather emphatic terms, the significant place that the "personal factor" occupies in the business of farming. *Secondly*, we must also round off this discussion with stressing the importance of the financial resources of the farm, even in the event of deficiency of certain material and human resources, the farmer could very well pursue his calling quite efficiently, if he has no dearth of financial means. But this is rather a difficult matter, for the farmers, all over the world, have characteristically a very low staying power and meagre financial resources, though these could be substantially supplemented by state, public or the private agencies, as far as possible.

CHAPTER X

AGRICULTURAL SYSTEMS

Agriculture—Operations and Systems : Their Relative Significance . Inter-farm Organisation—Family Farming : Scattered Farms and Their Patterns : Compact Tillage: Settlement Type: Decentralised Variety : Integrated Systems. Group-Management—Communal Farming : Joint Cultivation : Co-operative Collectivisation. Unit Cultivation—Farming Skills : Peasant Farming : Metayage : Estate-Farming : Tenancy. Summary and Conclusions.

In the last chapter, we discussed in detail, the various aspects of agricultural operations and saw how these operations influenced the nature, character and course of agriculture. In this chapter, we propose to discuss the chief systems of tillage and their main characteristics. This subject stands in sequence to that of the operations, for the reason that the peasant is more concerned with the systems of tilling, rather than with the grouping and classification of the operations that he undertakes.

AGRICULTURE

Agriculture being a composite industry, there are various aspects of the same. But tillage is the most important constituent of agriculture and the most fundamental occupation in this sphere of economic activity; the system of farming requires a specialised study on our part as a prerequisite to the more intimate and detailed understanding of the problems of land tenures and village organisation. The last chapter served as a kind of introductory description of various types of activities undertaken on the farm, this study seeks to develop deep into farming business mainly and only incidentally notices the other "operations" which may be regarded as minor or subsidiary to the major job of cultivation. We are concerned with the farming aspects of agriculture and would exclude other operations, like marketing, surveying, book-keeping and maintaining of records, etc. This means that all those jobs that are, in other words, "external" to the farm-life and farming activity are not to be noticed in this study. In our opinion, the external jobs are not so vital to the main tasks and assignments on the farm, and do not influence either the life of the villager or his outlook or village organisation or even the various aspects of farm-management. Hence, it is vitally essential to get a more intimate and detailed knowledge of the various systems of farming in particular.

Operations and Systems. The term "operations" refers to different types of tasks that are undertaken on the farm and that are incidental to the main job of agriculture, for example, cultivation, plantation, livestock farming, horticulture and miscellaneous other

jobs. But by the term "systems" we understand the method of farming, for example, scattered farming, tenant farming, group farming and group management. Agriculture consists of much more than a mere conglomeration of a number of farms, the farms can be fitted together, for the purposes of tillage, according to so many patterns. Under the heading "systems", attention will be given to the various "patterns" according to which tillage is carried on.

Their Relative Significance The significance of operations lies in the fact that they imparted us an understanding of the numerous jobs in the field of agricultural activity and their relevant place in the agricultural set up of the economy and in the routine of farming. A study of agricultural operations acquaints us with the essentials of agricultural jobs and their main characteristics, but a study of agricultural systems, on the other hand, informs us about the various ways in which different farms may be tilled, we are thus brought closer to the realities of cultivation. A study of the operational odds in their bearing on agriculture is an indispensable prerequisite to the understanding of the problems of the various "systems" of tillage which, in turn, have a determining influence on the village organisation, an important topic of study in the field of Agricultural Economics. Furthermore, problems and issues arising out of a study of Land Tenures can also be grasped better if we have a background knowledge of the essentials of farming systems. Thus, most of the problems have their roots in systems of husbandry. Even now when the agricultural operations have a wider canvas than ever before, the fact that tillage is easily the most important job and will probably remain so for some time to come, should be recognised. We study this subject under three main headings, Interfarm organisation, group management and unit farming. Under the first, all the various types of tillage will be viewed briefly, under the second joint systems and under the last unit farming.

Interfarm Organisation Interfarm organisation is the next subject that we take up now for discussion. The major distinction in the pattern of inter farm organisation is that between having the farm homes and farmsteads *scattered* all over the countryside, and having the farmsteads packed closely together in a village, with farm lands located away from the village. Different issues arise in different farms, these we shall discuss in this section. *Scattered* farms have strange patterns, which we shall have occasion to detail, while the *compact* farm is beneficial from some other point of view, and has certain other repercussions, both on the character of agriculture and the nature of farming. The settlement farm has different characteristics and newer ends to achieve. While the *centralised* farm is another special variant that we shall notice in this survey, the *integrated* variety, that prevails in certain parts of the Americas, is also an interesting experiment that is being tried. We shall, in this section, describe the

farm as a producing unit or at best as a business unit, and not a legal unit. In *peasant* farming, usually, farming is undertaken on a self-sufficient basis; everything produced on the farm is consumed by those who produce it. As a business unit, it may be worthwhile to draw up the balance sheet though the usual practice is not to draw up such balance sheets. The main feature of *business* farming is not the "balance sheet" but the business point of view that dominates the farmer's outlook; if he undertakes his farming not for reasons of his and his family's subsistence or for self-sufficiency but for market-disposal, then this type of farming is *self-sufficing* type. There are also family farms, which may be both family units or business units. On this farm, the family and the farm exist together. They are just family enterprises. The various variants are *part-time* farms, *homcraft* farms and *residential* farms. In certain regions of Europe and the West, are also farms allotted to the workers, these farms are known as the "workingmen's allotments". These farms are a class apart and we shall consider them before we notice the other types of interfarm organisation. The farm is also a statistical unit, but that need only bother the researcher and not the farmer. Any tract of land operated under one management for tillage is a farm.

Family Farms. Having defined the *family farm* as a unit where the family and the farm function together, we set out to consider the variant of the same. The family, the farm and the business, all these co-exist. The business units that most resemble these farms in this respect are the retail stores, often run as family enterprises. In the event of such a fusion of business and life of the participants, there could not really be any separation of the two, even theoretically speaking. An artificial differentiation, could, however, be made; for example, treating a farm residential building or a family garden as quite a separate entity and not as a part of the farm; but this type of separation, as often as not, makes the entrepreneurial decisions more confused and not clarified. A family "size" farm, is large enough to just utilize the labour and employ the resources of an average farm in the area; this particular term is thus more scientific, being more exact and precise in its connotation. There is, therefore, a separate size of farm for each family. The family "type" farm, however, is a variant that may hire extra labour in certain operations and may have surplus labour in the "off season." In short, these farms provide a living to the family, and the satisfaction of seeing the farm business thrive, to every member of the family. Family farms are of many types; small holdings, part-time units, homcraft types and the workingmen's allotments. Small holdings aim at converting the tenant and farm labour families into owner units. Without sufficient resources to become owners of full-sized farms, these poor families are allotted small prices of land to enable them to live independently and on their own. Part-

time farms are usually another string to the farmer's bow. *Home-raised* farms are those on which home manufacturing is combined with farming, hence are really special types of part time farms. *Residential* farms are establishments, maintained in the rural districts for the purposes of residence rather than for production. *Workingmen's* allotments are laid out in small patches of gardens, leased from the local authorities. Similar are the small *garden* farms.

Scattered Farms and their Patterns Farms are usually scattered all over the countryside. The farmers have, therefore, to walk to the farmsteads every day, transport feed and fodder from the field to the homestead and haul manure back to the field. This raises the problems of transport costs which may be added to the main costs of farming. *Scattered* farming may be advantageous, in that the farmer's business is not paralysed in case of pests and diseases visiting a certain farm in a certain locality, he may also be able to reap the fuller advantages of various types of soils and lands, and the peasant may as well be in a position to grow a larger number of crops and undertake a greater variety of operations and thus secure for him a more stable income. But the disadvantage lies in that large-scale compact farming may be an impossibility and mechanisation may not be practised on these scattered farms, again the peasant may lose a lot of time in moving from one farm to another. But this type of farming is practised not out of consideration for the pros and cons of the variety, but out of traditional reasons. That has been the practice for a fairly long time, or holdings have been subdivided on account of the law of inheritance. There are many patterns of this variant: the *rectangular*, the *regular*, the *irregular*, the *parallel* and the *divided* holdings. The *rectangular* pattern is, as the terms imply, a geometrical type drawn out in the form of a rectangle. The *regular* layout may be any other pattern on a geometrical design. The *irregular* strips are of a complex and irregular pattern, lying on the countryside in a block of some unfamiliar design. *Parallel* strips are usually laid along the roadside or the bank of river in parallel farms, they are suited for community life of the tribal pattern. *Divided* holdings are the rule, where the effort has been to subdivide each part of scattered farms, they could also be named as "*fragmented*" holding. These holdings are the rule in certain economies like India, where operate laws of a strange concept of equity. If, of an economic size, these holdings secure a good balance of arable land, woodland, and meadows. But if carried too far, this results in uneconomic, wasteful farming.

Compact Farming The *compact* type is either large scale or small scale. What factors determine the scale of farming, are analysed in rather detail in a later chapter. Suffice it to point out here, that the larger scale has the advantage of modern

technique being a practicable proposition on such farms; mechanisation could be introduced as also other costly equipment that may be useful for the farm. But the smaller size of farming unit enables the farmer and his family, of modest means, to earn a living for the subsistence of them all, while in the largesized farms changes in the patterns of agriculture could not be easily made; in the smaller units the position in regard to production is not so rigid and inelastic. Sometimes *compact* farms, i.e. large estates are split up into smaller units with many tiny farmsteads. Under the single-unit system, also known as the *centralised* farms, prevalent on the plantations, the labour is mostly hired and assumes the usual responsibilities of indentured labour. The compact type may be also the result of the consolidation movement initiated by the state or the co-operative agency seeking to remedy the evils of fragmentation of holdings. The compact farms are of thus several varieties: the large-scale and the small-scale; centralised (big) estates and consolidated farms—all these different variants of these *compact* farms earn the advantages of better farming. *Compact* farming avoids the evils of land-wastages, often characteristic of fragmented holdings in the form of boundary lines and mounds; and also litigation, for the possibility of disputes arising out of land rights are at a minimum. Land-hunger is also satisfied to a greater extent than in the case of *fragmented* and *scattered* farming. It is, therefore, easier to raise the standards of both farming and living in the case of these farms than in other cases. But the dangers of absentee-landlordism, particularly in the estates and the plantations, is also everpresent, and must be guarded against. If run on an individual self-cultivator system, “compact” farming may prove to be beneficial; but more of this below when we discuss the economics of peasant-proprietorship.

Settlement Types. *Settlement* farming is a peculiar type of husbandry. This practice is prevalent in the newly settled regions of the countryside. In the recently reclaimed lands, this type of cultivation prevails. Also, in the newly settled countries, like U. S. A. this cultivation type is the usual. The farms are unusually large ones, with residential homesteads on them and are quite compact while cultivation is of the extensive type. The landlord, usually known as the settler, lives on the “premises” and is either a long-term lessee (say for about a century) or has his full proprietary rights in his lands, which have been allotted to him by the government or they have been places where settlers or colonisers first settled and “usurped” proprietary rights. The whole job of farming is an arduous one; the settler has to clear the land, set up the irrigation projects and do several odd jobs of a preparatory nature, making the land fit for cultivation. In this manner, the pioneer-peasants “earn” the proprietary rights in their lands. The *settlement* is a composite one, and farming is not specialised:

it is running all the agricultural operations simultaneously, therefore, the true *multiple* type. Examples are found nearly everywhere, in India, for example, the Punjab Canal Colonies, were colonised on this very principle. Apart from advantages to the peasant, the national benefit is also great. Lands awaiting reclamation are brought under the plough by individual peasants. Again, the problem of rural unemployment is solved. This type of agriculture is useful from the point of view of the diversification of industry, in this case, farming. The *settlements* are not necessarily scattered these may be of a compact and well knit type. In certain cases, settlers originally held all their land, except the home lot in the village, in one piece, but through the process of succession, compact holding was equally divided among the heirs, and thus the new farming types shaped themselves out as "scattered". Within a few generations, the average farm consisted of several fields in separate locations. The farmer is reaping advantages of diversified farming.

Decentralised Farms This is a variety which resembles absentee-cultivation. Farming is not the compact type, nor even the scattered one but the type in which the landlord supplies the equipment. The *croppers*, as these cultivators are usually known, live in small houses adjacent to lands they work on, and all the work stock and equipment is usually kept in the "headquarters" buildings. Any cattle and livestock, except that owned by the "cropper" family, is also kept in the headquarters. The work of the cropper families is usually directed in the same manner as that of hired labourers. This system needs to be distinguished from that known as "Metayage" (Batai in the Punjab). Under the latter system, absentee landlord supplies part of the equipment and shares the produce with the peasant cultivator (the tenant who ploughs the landlord's land) and receives proportionate share out of the produce. No wages are paid to the cultivator, nor does he work strictly under the direction of the landlord, as he has to, under the *decentralised* variety. Another variety is the one found in Latin America, where cropper families have a small tract of land which they farm for their own use, in return for this they have to work on the central farm of the landlord of the whole tract, for two or three days in the week. This system resembles very much Feudalism, prevalent in Europe in the Middle Ages. The Spanish *Grandees* transplanted this system in Latin America, where it has thrived, ever since. Broadly speaking, the *Kolkhoz* or the Collective farms in Russia also belong to the *decentralised* variety, for they hire the machinery and other equipment from the central stations, and work on their farms allotted to them by the State. The *Cropper* system is, therefore, characterised by certain distinct features, equipment and livestock belong to the landlord who hires tenants and directs agricultural operations. The individual farms are quite decentralised, though the main co-ordinating authority is still the landlord. Instead of paying them wages, the

landlord, on the Latin American farms, the *haciendas*, may make permanent allotments of land for providing subsistence to the tenant-cultivator.

Integrated Farms. This is a very novel type of farming. Popularly known as the "Walker-Gordon" type, this is especially in vogue in New Jersey (U. S. A.). Some farms grow feed for dairy herds on a contract for so much per bushel, while they obtain from dairy farms or central management, manure and other supplies at a contract price. Similarly, other farms raise cattle, again on a contract price per unit of weight gained, the central management providing sires for the purposes of breeding. Usually the actual milking herd is broken up into units of a hundred each and operated under contract prices for feed and milk produced; and milking is done in one central milking parlour. This is an example of dairy-farming as worked on the integrated system. Other types of farming could also be done on this integrated system; the underlying principle is that of one task feeding and being complementary to the other; all operations fit into one another. We might compare this system with the self-sufficiency in Indian villages, where all jobs are complementary to one another and the villager has rarely to go out in search of either raw materials or goods that he may demand. The variants of this type could be found on cultivation crops or plantations or cattle farms, or multiple farms undertaking divers operations. The essential is that all operations are complementary to one another. Several advantages may be said to accrue from this system; jobs are so very much integrated that the farmer has no marketing problems for he finds a ready disposal of his goods right in the closeby farms, and the costs of the feed and fodder products are also considerably reduced, while it is possible that the products which are demanded are produced specifically to meet the needs and requirements of major farms. And then, this is instructive in so far as the practical lessons of co-operative living are brought home to the farming community and the gains in this respect are also inestimable. This system of farming is a very good prerequisite to the introduction of the co-operative system in the backward communities. If the farming communities practise integrated farming they would learn the lesson of integrated living and eventually adopt it too.

GROUP MANAGEMENT

Next we consider various aspects of *Group Management* which also prevails in certain communities. This type is essentially the communal one. The characteristic common to all the various farms—*communal*, *joint*, *co-operative* and *collective*—is that the individual ownership rights are not distinguishable, they are all common and do not vest in any single person or family. In certain cases, the shares of each may be well defined

and the share of the produce may go to each participant cultivator according to his ownership share. Another characteristic is that village organisation also follows same patterns. In the eyes of Law, too, the land rights are also common and the liabilities in regard to the payment of dues, etc., also joint and indivisible. Not that land is cultivated by owners, sometimes cultivation is entrusted to tenants or labourers in the busy season for the help they render in the harvesting of the produce. Under *joint* organisations, farming depends upon the prevalence of community spirit and the bonds that thread the organisation for if the community is well knit and co-operative in its relation to its members the success of the enterprises is ensured. But, if the interrelations are not happy but marked by jealousies and rivalries, the whole system is characterised by failure and litigation. Thus group management is both a blessing and an evil, it depends upon the organisation of the group under consideration. Still, it affords an opportunity to lead a corporate life and so a joint and communal living. Traces of this group system are still to be found in the village commons and pastures, on which everybody has equal rights. With the rise of individualism, this has decayed, though resurrected anew in the form of co-operative or collective farming, thus reinforcing the contention that group farming is one of the best forms of tillage. One thing is certain that it does not lead to uneconomic holdings, for the holdings remain indivisible; they may be only redistributed among the participant families at intervals to ensure fairplay and avoid complaints.

Communal Farming Communal farming appears to be a relic of the feudal system. Feudalism gave way to those forms of farming, which have been characterised by joint ownership with operation in strips of the arable land, and common use by the farmers of pastures, meadows, and woodlands. Redistribution of farms takes place periodically. Undistributed pieces of the village commons, woodlands and wastes are remnants of this system. The system may still be traced in the Americas, where the "Spaniards" transplanted it from Europe. *landholding* villages were set up, and two types of lands were distinguished, the *arable*, distributed among the villagers by rotation for a very nominal rent, and the common pastures and woodlands jointly used by all the cultivators, while just outside the village was also a common tract of land for various public purposes. But this system is as old as civilisation itself, even the ancient communities like the Aztecs and the Mayas held the hunting lands in common and worked their croplands as a unit, though held in separate family tracts, which could not be alienated. Under this cultivation, if a family did no longer cultivate its unit, the village assigned it to some other family. If,

however, enough land is not available, as might happen with the expansion of village population, then the rural community, in order to provide for additional families gets more land for cultivation by clearing, irrigation, or further expropriation. More enterprising communities may also own larger types of farm machinery in common and do the buying and selling of land and produce jointly and co-operatively. There are certain very distinct advantages arising out of this farm. The invidious individuality of the farmer is merged in the collective outlook and the village community is strengthened when each farm family knows that it has to depend upon it for his subsistence and profession. Indian villages, in particular, were able to retain their ancient culture and modes of living, (in spite of the changing regimes that followed one another with quick succession), simply because they stuck to the communal mode of farming. But in the event of a disintegration of the village community, the above advantage will be extinguished and this system superseded by unit farming.

Joint Farming. The system of *joint farming* is quite akin to the above type. In this system, cultivators may all come from one stock and be related to one another. In the ancient and olden times, a tribe may have settled in that village and owned arable land as joint property. While land remains inalienable, *i.e.* that which cannot be split up or parcelled out the share of each "shareholder" is known and calculated and his share-produce given to him at the harvesting time. All the owners may not be cultivating land, still they are entitled to their shares, the only difference between the active and the sleeping shareholders is that the active owners receive some remuneration in lieu of their input. Even if somebody wants to dispose of his share of land, for one reason or the other, the customary law makes it obligatory for him to sell it away only to the community and no outsider. The reason is obvious, the lands belonging to the individual families are not demarcated on the farm lands, it is impossible to say where a particular shareholder's land is located; therefore, it is impossible to grant the rights of farming to an outsider who may not submit to the discipline of the community which, in turn, may treat him as an outsider and not one out of their clan. And then, the farming units are often re-distributed periodically among members of the community; this also raises difficulties for an outsider. Under joint farming, therefore, the agricultural enterprise is truly joint and indistinguishably common. The ends of agriculture are not personal and individual, but the common communal ones; whatever the community decides, the individual has to submit to it. This system is common in ancient communities, as in India and China. The advantages attendant upon this form of cultivation are quite apparent; the evil of uneconomic holdings is eliminated, for the

holdings are not partible. The well-knit organisation of the village community makes for the strength of village agriculture, too. But then the danger is that the mode of agriculture may get to be a traditional one retaining its same old character through the centuries, without any individual incentive to progress in the sphere of farming.

Co-operatives. The next important form of group cultivation is the *co-operative* one. A form of joint organisation, this makes the operation of farm machines possible by smaller cultivators. Both machines, the *moveable* types, like tractors and silo-filling machines, and the *immovable* and *stationary* types like cotton-gins and cheese-making equipment, can be had by the co-operators. Difficult problems of human relationships are, no doubt, raised by the joint use of such equipment, but we are now able to solve these problems in an effective manner. Co-operation has extended to almost every field of farm activity, in the use of sires and in the functioning of co-operative farms, for specifically irrigation purposes. In the field of marketing, selling and buying too, co-operation has made some headway, for thus overhead costs are considerable. Recent purchasing associations, formed on co-operative basis, is the latest in the application of the co-operative principle. In the backward regions, where the needs of the peasant are more or less financial, the development of co-operative credit has been most marked. The credit unions serve a very urgent need for financial assistance among families with low incomes, subsisting on small tracts of land. Co-operation has also spread to the spheres of cattle and crop *insurance*, while some of the public-sponsored bodies have also been started off on the co-operative pattern. In the advanced countries, rural electrification, water supply and telephone have been installed on co-operative basis. The one aim of co-operative farms is the elimination of the middleman who seeks to profiteer at the expense of the consumer. Co-operative farms, if successful, re-inspire the farming communities to harder work, and also re-integrate village communities in firmer bonds of brotherhood and closer kinship. Thus the non-economic advantages far outweigh the mere economic ones. This is not to suggest that the economic gains from co-operation are slight, the provision of certain amenities in rural areas is possible more easily through co-operation. And lastly, the all-round progress of rural enterprises is ensured. It is the satisfaction of the ownership instinct that co-operation satisfies, without the evils of private property.

Co-operative Farming. The application of the co-operative practices to the sphere of tillage has been remarkably rapid and significantly successful. There are as many as *four* distinct forms of farming undertaken on co-operative

lines; Co-operative *Better Farming Societies*, Co-operative *Joint Farming Societies*, Co-operative *Tenant Farming Societies* and Co-operative *Collective Farming Societies*. In the *first* type, i.e. the *Co-operative Better Farming Societies*, individual ownership and individual proprietorship and individual operatorship are retained. The aim is to introduce improved methods of farming. Co-operation is extended to a number of farming operations, say in the using of the tractors. The plan of cultivation, on an improved pattern, is accepted by all members who agree to abide by the same and introduce improved methods of cultivation and also make contributions for the hire or purchase of better implements of farming or better seed or scientific manures. Each member tills his land independently, paying the co-operative society for the service or the commodity he receives; the accounts are settled annually and patronage dividends distributed. Under the *second* variant, *Co-operative Joint Farming*, individual ownership rights are recognised and respected but holdings are pooled together so that joint cultivation is possible. Work is done on the joint farm by members who are paid by a "managing committee". The produce is grown and distributed collectively, and the proceeds shared. Members pay for any permanent improvements made in their farms, if they no longer remain members. The *third* type, *Co-operative Tenant Farming*, ownership is joint and collective, but the operatorship is individual. The collectively owned land is parcelled out into smaller holdings leased out to individual tenant cultivators, who are members of the society. While the general plan is outlined by the society, the details of operation are those of the tenant. Each tenant pays a fixed rent to the society, the landlord. In the *last* form, *Co-operative Collective Farming*, the ownership as well as the operation is collective. Joint cultivation is undertaken by all members pooling their labour, and getting prescribed wages. Profits are distributed from the collective pool.

Assessment. Having acquainted ourselves with the various forms of the co-operative farming, we now try to understand the relative merits of each. Generally speaking, the adoption of the co-operative system in the sphere of farming, leads to the realisation of many beneficial results, without the disadvantages of peasant farming and collectivisation. In the purely economic sphere, the peasant is enabled to reap advantages of large scale without any of the disadvantages attendant upon it. There is centralised management with decentralised and democratic control. Economies in the matter of purchase of raw materials and in the marketing of produce are effected, while the farmer can introduce the best technique of farming and use costly machinery and even employ agricultural experts to advise him; all these he could not have done singly. In the non-economic spheres, the farmers develop a strong sense of security and cultivate group spirit. Better working conditions may result in reduced hours of work. All forms of exploitation may end. The remuneration

nerations will, therefore, increase, too. Each member will have also a direct interest in the enterprise, and this alone will spell progress and better productivity. The provision for other amenities, education and medical aid, will be considerably better. Besides these direct benefits to the workers, the spirit of the movement will also percolate to the community as a whole. The standard of living of the rural masses will rise appreciably due to increased production, rendered possible by the co-operative movement. New opportunities for settling the youth, the idle and landless labourers on lands brought under the plough by the co-operative organisation, will multiply. Not only that the introduction of co-operative farming ensures a fuller life for the community but also gives fullest scope for the creative development of the individual farmer's personality who will feel more secure and stable in his work. Joint farming will also be instrumental in bringing about closer co-ordination between the farmers and the state who will find it easier to contact "societies" (rather than individual farmers) for purposes of guidance, information and implementation of policies.

Special Merits Turning our attention to the relative merits of each system of farming, we find that each of these is specifically suited to certain circumstances. The Better Farming Society is the most elementary form of co-operative farming. It is suited to those regions where the individualistic spirit is still strong and the farmer rather resistant to co-operative types. This loose variety of co-operation is, thus, a practical step towards the introduction of other forms of co-operation. Independent working and individuality of spirit are retained, and the interference from the society is the least, hence the peasant receives just an initiation into the principles of co-operation. The next stage is reached when only individual ownership is retained, but joint cultivation practised. The particular merit is that the farmer learns to work for the organisation along with other members, he begins to lose his individuality and sink it in the co-operative society, and for common good and joint objectives. Quitting the society is not so easy, as each member has to repay the cost of permanent improvements effected on his farm. Withdrawal thus being difficult, membership remains continuous and the farmer continues to reap the advantages of the co-operative organisations and receive training in the spirit of co-operation. In the Co-operative Tenant Farming Societies, the ownership is collective but operation individual. Collectively owned land is divided into smaller holdings and leased out to an individual cultivator. This type is suited to those regions where the holdings are scattered and not compact, and consolidated farming is not a possibility. The advantages of farming on mechanised basis could not be reaped, hence tenant cultivation is resorted to. It is able to solve the problem of rural unemployment and can also be practised on the landlord estates, which may be scattered. The superior landlord is replaced. Under

the Co-operative Collective system, the final stage of evolutionary co-operative farming, large-scale farming is rendered possible, facilitating the mechanization of agricultural production.

Collective Farming. This type of group farming is an important variant of the group system of agriculture. This is also growing in practice, probably because of the success of the Russian experiment. The system is also known as State Landlordism. Under it the land is pooled and the individual property rights sunk altogether. Land is jointly cultivated, most usually in very large strips so as to permit of mechanised and large-scale farming. Division of labour is also introduced on these farms. Overcrowding is avoided and the actual cultivators are just tenants to the State or the proper authority. Management may be vested either in the State or the owning authority or sometimes in the representative body of peasants, who have been cultivating a particular farm. The marketing and other functions are often performed by specialised agencies. Rotation is introduced by the planning authority and the tillers of land are only those who are to carry out these instructions. It is pointed out that this system is absolutely red-tapist in character, the individual initiative and the weakened individual farmer thus reduced to a mere automaton working according to instructions of superior authority. But it may be wondered if the peasant has sufficient commonsense and technical knowledge and experience with which to undertake the farming organisation as successfully as when he is directed in details. Probably some sort of regimentation is an essential prerequisite to the success of collective farming. It is claimed that this system ensures a high rate of agricultural productivity. Collectivisation is introduced for the sake of an enhanced standard of rural living, for the benefit of the farmers, who gain by the introduction of this system. Research, education and planning, all these are taken up by the superior authority. If the state officials are upright, honest and efficient in their work, the system is pure and to the good of the people and the peasantry, but if they become corrupt or exacting, the system becomes one of the worst possible. In short, Collectivism in farming, vests the state with rights and privileges that may, if rightly used, would go far to do good to farming, otherwise it may muzzle out all enterprise.

The Inference. From the above description, it should be clear that the system of group management is an improvement upon the one described in the preceding section. But the success or otherwise of this system depends upon interrelations in the group. If these are smooth and co-operative, the group is well on the way to progress and the peasantry prosperous. Most of the group farms flounder on the rock of mutual jealousies and lack of a spirit of team work. Team work is essential to the successful functioning of the group. In addition to the above there should also

be mutual confidence in the group and its working. In the group system, the various forms of tillage could be undertaken, especially the integrated ones. Group management is quite elastic in its farming systems. One extreme is the adoption of independent farming, though under the aegis of the group and the other extreme is the complete regimentation under the system of collectivised farming, and between these two are several forms of agricultural organisation and tillage forms. One supreme advantage of the system is that the resources of the group are pooled together and the individual benefits by the utilization of larger resources which he otherwise could not have afforded. And then the group system also affords an impetus to the reorganisation of village community on a healthier plane. Revitalisation of the rural community is quite significant for the resuscitation of agricultural production in the country. The efficiency of the villager is also improved, if the communal organisation put on a better and healthier plane. The inference is that the group and joint systems are superior to the unit system which we set out to study in the next section. We found that the "communal type" is suited to regions where feudal traditions are still persistent and the hold of village community effective. "Joint" cultivation is more useful in those places where a single family or a clan has been in the village, as owners of village lands, it retains the closely knit character of the organisation. The co-operative system is also very elastic and adaptable to various kinds of social organisation, too.

UNIT CULTIVATION

By "unit cultivation" we understand farming in which the peasant is the most important person and the system of cultivation, under the direction of the single cultivator, who is entrusted with it. Group organisation has no longer any control on the peasant who does the farming, either independently, or in share-holding with somebody else, or as a tenant to an absentee landlord. But the ends in all this remain the same. The individual ends are the ones that are sought to be served. The effects of the individual farmer's activities are not considered by him on group activity. While under group farming systems, group ends have to be satisfied first, in unit cultivation the individual peasant is not at all concerned with the group. Though the effect on land is sometimes taken into consideration, when individual ownership farming is undertaken, the general rule appears to be that the impact and the effects on the well being of the family are taken to be more vital than any other considerations that are relevant to the individual cultivator. The incentives in this particular case are not the group ones, but the purely individual ones. Unit cultivation prevails in the countryside saturated with the spirit of individualism. The success and prosperity of farm enterprises depends upon farming skills of particular and individual farmers. This skill, however, need not be confused with

precision required in certain other trades, but in the right timing of farming operations. The farm workers must be able to make a variety of successive decisions, each at the right time. More and more of the farming work has become skilled in the realm of agriculture. And the difference lies in the fact that while the factory worker has a foreman at his elbows to tell him just what to do, the farmer has to do odd jobs all by himself, depending upon his own judgment and vision. A large range of farming operations await the attention of the farmer, all the way from milking a cow to managing a tractor and other farming machinery. But the ordinary average farmer is not half as efficient as he should be.

Farming Skills. Before launching on an analytical survey of the various system of unit cultivation, it may be appropriate to understand various factors indicated in the skill of the farmer. This understanding of various constituents of farming skill is necessary in order to appreciate the implications of various forms of unit cultivation. Farm labour is different from other forms of labour; it is neither craftsmanship nor expert labour as in certain trades. Farm labourer is a special class by himself and can hardly be classified with any other group. While they have to make independent decisions, the time factor is the most important in influencing their decisions. And there is a succession and sequence in their decisions, which if disturbed or upset, would seriously impair the efficiency of the individual farmer, and bring down productivity. The ordinary skill required in performing several odd chores of farming need not be very specialised, still it is not possible to separate the same from the managerial skills, especially when the individual peasant is in complete charge of his farm, and is the worker as well as the entrepreneur. This distinction does not remain real in this particular case. There is only a thin line of division, if any at all, between the farmer-owners directing their own labour, and the tenants doing their odd jobs. The job of a farmer is more difficult than that of the skilled labourer in a factory, the latter has to be efficient in one or two branches of the industry, but the farmer has to be efficient all-round; for he has to assume complete charge of a continuous round of activities. The successful and ambitious farmer must understand enough about practical aspects of soil chemistry, and plant genetics to be able to carry out successfully his cultivation programmes. In addition, he should also be aware of the rudimentary elements of animal physiology, of feeds and feeding, and of infection control so that he could manage his livestock with credit. Similarly he should also be an engineer, if he is desirous of employing modern machines efficiently on his farm; that is because of the paucity of repair shops in the rural areas. Other factors listed as important are buying and selling ability, and sometimes ability to handle labour, as well as high degree of mental alertness and aptitude.

Peasant Farming This particular system is considered to be the best one, among all the types of unit cultivation. The ordinary cultivator is also the owner of the farm. He may, however, hire labour in times of need, but that is to assist him in the farming business and not for cultivation operations of a major type. The cultivator and his family do most of the agricultural operations. The unit of cultivation varies from the subsistence one to the optimum one. Usually, the peasant farms are family holdings. Simply because the peasant owns a particular farm does he put his heart and soul into the job and undertakes various operations with a view to conserving the soil and keeping agricultural efficiency in tact. In this variant, the number of unpaid family workers is largest, for boys are serving apprenticeship on 'family farms'. Under the system of peasant proprietorship, the contribution of wife to agricultural operations is the most important. This is true of all economies, whether backward or advanced, without her many odd jobs would remain unattended, for this enterprise is truly and fully a family enterprise. Heavier jobs are left to men, while womenfolk perform most of the light jobs, right from the provision of meals to casual labour, to direct and full participation in the farming chores, like threshing and harvesting. Also, the contribution of children to peasant farming is quite significant, in that the ordinary labour legislation remains inapplicable to children working on the farms, due to the difficulties of enforcement of law. Farmers' interest being very closely rivetted to his own farm, he takes all possible measures to effect as many improvements as he can, consistent with his means. The magic of property is, undoubtedly, effective and potent in turning sand into gold. In short, the system of *peasant* and *ownership* farming is useful in providing employment to the whole family and can guarantee improvements in agricultural productivity of the region, in which it is practised. But there are some pitfalls, too, the constant sub-division and fragmentation may reduce this system into an uneconomic one, while the limited resources of the single farmer may also impose upon him another limitation and may be restrictive in his plans to improve his holdings and farming enterprise.

Metayage Next we turn our attention to *share* farming alternatively known as metayage. This system seems to be very common in several countries. The usual characteristics are that land belongs to landlord and the peasant cultivates it on a share basis. Some sort of rough division of costs is made. For example, in the Punjab (India), the landlord supplies land and pays land revenue which is also considered as a separate cost, the farmer works on land and tills, supplying his own tools, etc. The produce is shared equally. In France, for example, the landlord furnishes land, implements and livestock and receives half the produce. Usually the landlord is *absentee*, but under metayage the landlord

is not an absentee. Sometimes he lives on the estate but if that be impossible, he does take an active interest in farming and pays frequent visits to his farms. The result is that the landlord is no longer an absent landlord but one who takes very active interest in his job. The disadvantage that there is a limitation (and a serious one, too) of capital, the resources and good equipment on the peasant farmer, is thus obviated and the equipment capital and the services of the landlord are placed at the disposal of the peasant who can thus become an efficient farmer. Another disadvantage that we noted was sub-division and fragmentation of holding. This was no longer there for the simple reason that holdings are not divisible because land belongs to the landlord and not to the peasant. Thus this system is considered to be an improvement over that of peasant farming. Still it is not without its faults. There is, for instance, the ever-present danger to the cultivator that he may be evicted at the pleasure of the landlord. There is no stability of tenure in this type of farming. Consequently, the peasant may be hesitant to work wholeheartedly and devote himself completely, unless assured of permanent tenure. Still the system is quite widely prevalent and the working peasant protected by the legislature and also granted rights of being compensated for any improvements made by him on the holding that he tills. Looking at the system from the purely production point of view, one finds that in case the farmer is enlightened and willing to put in his best and the landlord also having better sense to realise that increased productivity benefits him and he is prepared to invest handsomely on the farm : production thus increases. But when the peasant-landlord relations are strained and not stable, the whole thing gets into a mess and productivity inevitably falls. Another point may be noted. Under this system there is lesser chance of the soil getting exhausted and being depleted of its nourishment. For the landlord is not an absent landlord nor only a sleeping partner, but one who takes extra care about his farm and would not like that the soils get famished and undone for future cultivation. The very fact that this system has lived through ages goes to its credit and it deserves special notice.

Estate Farming. The next thing under consideration is the variant commonly known as estate farming. The arable land belongs to a certain landlord. There may be one compact big piece of land, or there may be several scattered farms of unequal areas. But the point is that these lands belong to one person, the landlord. It is possible that the compact farm may be cultivated, on the large scale, but unfortunately that does not happen. The landlord is usually an absentee who does not take an active interest in the lands owned by him. He only hires labourers to cultivate them.

There are two types of such arrangements. One may be that he employs labour force, the cultivators, to till his land and pay them wages. The other system that is more usually adopted, is that he lets out the farm to the highest bidder and does not bother what happens later. The crop may or may not ripen, the yield may or may not be a bumper one, cultivator may earn something or may lose,—none of these things bother the landlord. The estate owner is only concerned with the pound of flesh. That is why this system has come in for so much criticism by friends of the farmer who call it "exploitation". Looking at the problem rather dispassionately, we find that estate farmer could bring about an improvement in the field of agriculture, raise its productivity and tone up the whole system if the estate owner did not content himself by being an absentee landlord. Were he to take an active interest and pay frequent visits to his land, with a view to finding out what is good both for the land and tenure, matters would considerably brighten up. Under the former variety, when larger labour force is employed by him to till land on his behalf this system does not remain so tedious as otherwise it might be. Hard labour should again not be treated very harshly for that would again bring about an evil effect. If maltreated the labourer will lose an interest and try to shirk work, instead of putting his heart and soul into it. Under this system (that of hard labour) the direction of farming is from the estate owner, who supplies, usually, not only seed and equipment but also other accessories of farming. There is, therefore, a better chance of the farmer getting more equipment and a better one. Under the latter variety, where cash rents are realised and the lands let to the highest bidder, there is a greater chance for exploitation. (By exploitation we mean a less than remunerative wage and return to the tiller). Cultivators are not able to adapt themselves easily to other jobs. Once farmers, they remain farmers and prefer not to change their profession. Therefore, there comes about a keener competition among them for land. This land hunger, as it is termed, is exploited by the clever landlord to let out land to the highest bidder. The cultivator in return wants to take the most out of land and thus deplete it of all its richness, leaving it poorer than he finds it, for he is not sure of any stable tenure. The inevitable consequence is the exhaustion of land which proceeds at a very rapid rate under this system.

Tenancy Closely akin to the above is *tenancy*. Estate farming results in the growth of tenancy. There are two important forces at work. In the first instance, the direct impact of estate cultivation is that it is possible only by tenants. There are several types of such tenants, whose detailed account will appear later in this book, in a chapter below. Suffice it to point out here that there are *five* major classes of tenants. The first type are *occupancy* tenants, or *hereditary* tenants. These tenants have been in occupation of a particular holding, or strip of land for generations and it is not easy to oust them from their lands. They continue

to enjoy certain superior rights and have a status permanently conferred upon them by tradition, custom and law. These hereditary tenants are real cultivators and know their land thoroughly well: the landlord being only a nominal owner getting a certain rent fixed by custom and tradition, or sanctioned by law. This rent can neither be increased nor revised except through a complicated legal process. These tenants divide and sub-divide the land among them just as the peasant farming might do. The holdings have, therefore, a tendency to get divided and sub-divided, as also fragmented. This is a grave defect, for the holdings, at least in those countries where the pressure of population is heavy, should not be permitted to get split up below a certain standard of farming. Occupancy tenants are sometimes distinguished from hereditary tenants. These tenants are in *occupation* of the land that they cultivate for quite some time. They are, therefore, entitled to certain privileges and are protected against injudicious evictions by the landlord. This term of occupation may differ according to legal usage say from seven to twelve years. The rent cannot be increased by more than a certain proportion and that also through an appropriate procedure, sanctioned by law. The idea is that tenants may be protected against exploitation by the landlord who may like to intensify the competition between them and thus serve his own greedy and selfish ends. Usually the landlord adopts certain mischievous tactics to see that, the same tenant does not continue to cultivate the same farm for in that case he may earn occupancy rights in the land and this in turn may entitle him to certain privileges and protect him against eviction and exploitation. What they do is that they rotate the tenant cultivator from farm to farm so that he does not in any case earn occupancy rights. Next is the *proprietary* tenant, who has been a proprietor of the land that he now cultivates as a tenant. Certain economic forces have reduced him to that status. He has been forced to sell his land because of certain circumstances. He could not afford to continue as a peasant proprietor which he once was. This is because of the second major force which is brought into action by the system of landlordism or estate farming. The landlords, by becoming creditors and assuming the role of financiers to agriculturists, are able to buy out the ordinary agriculturist's land and add to their own estates. The bigger fish thus eat up the smaller, unprotected, indigent fish. This process goes on relentlessly, with the result that tenancy multiplies at a fast rate. The tenants thus created are known as proprietary tenants for they were once proprietors of lands which they are now cultivating as tenants. Sometimes some proprietary rights are only a semblance of them, are retained in the lands, probably to serve as an eye-wash, by the clever landlord. These tenants, when recognized by law as such are not liable to easy eviction. Their rents are usually fixed mutually, and sometimes they are also given the right of possible resumption of their full proprietary rights in their

lands. Thus they live on the hope that one day they may gain their old rights and be able to give up tenancy. Fourthly we have the *protected* tenants, who though only tenants, are under the protection of law. They do not enjoy any occupancy, hereditary, or proprietary rights in the land they cultivate, but are protected against exploitation or eviction by proper legislation. Last are the tenants-at-will, or "serfs" remnants of the feudal age who have no rights but all obligations and duties.

SUMMARY AND CONCLUSIONS

The scope of this chapter has been fairly wide. We have discussed and described in some detail the various types of agricultural systems. We distinguished between agricultural operations and agricultural systems, *operations* are concerned with the essentials of agricultural tasks, but *systems* inform us about various ways in which the different farms may be tilled. The relative significance of the two analyses was also brought out and it was found that the systems of tillage had an important bearing on the nature and character of both agriculture and the various economic issues, arising out of it. We grouped the description of system under three main headings. Interfarm organisation, group management, and unit cultivation. Interfarm organisation described the pattern of farming, and ranged in its discussions from scattered farming to integrated systems. We described the various patterns, the rectangular, the regular and irregular ones in scattered farms, and noticed the issues thereof. As an introduction to interfarm organisation was discussed the subject of family farming, widely prevalent in mostly agricultural countries. In contrast with scattered farming, were set the type of tillage, commonly known as compact farming. We noticed that compact farming is a variant permitting large-scale tillage, admitting of mechanised and scientific forms, impossible to be practised on the scattered farms. Next was noticed settlement types, and all the details about their forms and functioning. The decentralised variety, in all its variegated aspects, was studied and it was discovered that this was not very conducive to agricultural production, though fairly widely distributed in the agricultural world. Integrated farms also attracted our attention. The system, which is in vogue in America, particularly the U. S. A. deserves critical notice. There are both the horizontal and the vertical varieties in the horizontal type farms are merely on the same level of cultivation, but on the vertical variety, they are feeding one another. But one thing common to both is that cultivation is essentially of a complementary nature, and the lessons of active co-operation are brought home to the farming community. Group management, in all its various forms, communal, joint, co-operative and collective, was discussed at some length. The group system is considered to amply suited for an agricultural community. It is argued that it is

fuses the real community spirit among the people. We noticed that communal farming descended from feudalism, and joint farming is practised in most compact form. Co-operatives, on which great stress is being placed these days, were described in rather detail and the pros and cons of co-operative farming are assessed at some length. The system was given special treatment and the reader's attention drawn to all the types of co-operative farming enterprises, and their special merits underlined. Next we noticed the more important variants of unit cultivation. This discussion was initiated by a close reference to farming skills, which have an important bearing on all types of peasant and unit farming. The variants that attracted our notice were peasant proprietorship, metayage, estate farming, and tenancy. We assessed each system on its relevant merits and demerits and found how peasant farming is hedged with several limitations, while metyage is sought to be an improvement on the same. Estate farming, with the problems of tenancy was given a significant place in the above analysis. We discussed the various tenancy problems and the several systems of tenancy. It would not be correct, in the light of this analysis to condemn outright any single system, nor would it be appropriate, at this descriptive state, to do so. It need only be pointed out that not one of them is a perfected system about which we could well be proud of and also sure of its being worked out in the purest type, without a single demerit or disadvantage, incidental to its working. Suffice it to point out that each system has some special role to play and no final word could be given until we discussed the role that each has to play in village organisation, in land tenure, and above all in influencing agricultural relations. We may conclude, however, that the co-operative system, which is spreading fast, is not without some special merits, it reconciles the ideas of ownership and joint farming.

VILLAGE ORGANISATION

Rural Structure—Agriculture in Rural Life Impact of the Farm Organisation on Rural Set up Village Types—Scattered Hamlets Farming Villages Rural Settlements Joint Communities Group Systems Co-operative Variants Proprietary Types The Inference The Correlation—Organisational Impact Farming Effects Land Tenures Miscellaneous Factors Rural Characteristics—Self sufficiency and Integration Vertical and Horizontal Types The Village Common The Changing Village—Disintegration of the Village Urban Influences Individualism Economic Dependence Widening Horizons Modern Rural Outlook Summary and Conclusions—Dynamism of the Village

Having equipped ourselves with a knowledge of the farming organisation we shall now try to visualise the chief characteristics of village organisation, which, in the opinion of many sociologists, is a function of the farming systems. The term "village" is not taken in its narrow meaning but in the wider implication of covering the whole rural countryside. Sometimes, the latter term "countryside" is taken to cover all rural regions, while the term "village" is understood to mean a regular settlement which may have some of the amenities of modern life. But in this chapter, we use the term "village" in the widest possible sense of the whole countryside, including the far scattered hamlets. "Rural structure" would cover all aspects of the countryside, from the old primitive scattered hamlets to the compact and self sufficient village, and its counterpart, the modern rural regions, having an industry or two, located in the farmlands. Though we shall not discuss the sociological factors, we shall make passing reference to them, as we develop the argument. The main subject to be detailed in this chapter is how the village and rural communities rise as a result of the main farming disciplines. We shall precede the main discussion with a descriptive review of the chief rural types and then establish the correlation between the two. Characteristics of rural life would also find an important place here as providing a background to the analysis which we propose to take up later. The transition in the village, or the dynamic aspect, will also be the subject of our examination, for without this analytical survey, the argument would only be of a limping nature. Thus the ground to be covered in this chapter is fairly and justifiably wide, for in the link of the previous chapters, we sought to place the individual farmer in the sphere of agriculture, the study of village organisation is essential.

RURAL STRUCTURE

The term "rural structure" permits of a wide variety of village organisations. A discussion of the same and its description are very

relevant to the understanding of the main agricultural problems especially in the context of democratic institutions which seem to have been securely established in the post-war world. A majority of the world's population being farmers, the success or failure of these institutions depends upon the right approach of the villagers to these institutions. Usually, it is maintained that the farmers have poor chances of climbing up the social scale: only the progressively attuned professional classes and the business sections of the population could aspire to do that. The professional and the business classes, no doubt, exert their utmost to see their sons and daughters reach distinction. But the country people, given the same opportunities of a good system of training and education, may not fare badly, even at present they still do remarkably well, indeed as well as the labourers. Another factor that needs be noticed is that the costs of bringing up children in the countryside are much less than in the city or the urban areas. A noticeable fact is that the rural regions have usually married workers, while in the cities, bachelors may also be able to run their businesses. The complexion of rural living is, therefore, much different from the urban. It is not the sociological factors and forces that we shall detail in this study: we shall be more concerned with the organisation of the various rural types and the rural set-ups from that angle. The perpetuation of the village organisation is more easily understandable if one bears in mind the fact that it is the resultant of social and economic evolution. In the medieval times, the rural sites were located on rather inaccessible places because of the need for defence against marauding tribes and invaders. Thus the village has also been influenced by "political" factors and considerations of security and order. The recent "Rural Movements," to which a reference was made in an earlier chapter, have also a bearing on the modern village structure. In certain regions, the urbanisation of the low-standard rural families has also been proceeding; but this has not been an isolated movement: it has had its impact on the rural countryside. Nearly simultaneously, too, has also started the reverse movement of de-urbanization, *i.e.* rehabilitating the "uprooted" villagers. And incidentally, a conflict in land usage might also arise (in the case of public and private uses) reflected in moulding the type of the village community in a certain rural area. All these considerations are general.

Agriculture in Rural Life. The place that agriculture occupies in rural life is fairly significant of the influence that farming has on the community and the village organisation. Although agriculture is an industry, chiefly pursued in rural areas, it must not be supposed to imply that this industry prevails to the exclusion of all other activities. In the old villages, self-sufficiency was the usual practice, and the village professional set-up was of a variegated nature; but even there, the main pursuit was agriculture. In modern villages, where self-sufficiency is no longer the rule, agriculture is the main calling. Agriculture, in this context, should be under-

stood to cover all those operations, described in a previous chapter. The fact that most villages have risen near places where water is abundantly available, goes to prove that it was on the basis of farming considerations that the first and pioneer farmers settled where they did. It is also a notable fact that irrigation works are of a very ancient origin. While irrigation canals were under construction, the farmers took to grazing and acquired substantial herds of cattle. The point is that the factors determining the growth and origin of village communities, are those favouring the development of agriculture in all its various aspects. Agriculture has, thus, been a very important force influencing the growth and progress of villages. It may be regarded as a strange coincidence that towns and cities have always been selected for the location of industries, this is probably due to facilities available in urban areas. But the fact that villages have been the centre of farming activities, is quite self explanatory, farming is mainly an outdoor activity and one for the fulfilment of which, the requirements in respect of land and other such natural factors, are wide and indispensable. Therefore, villages have always localised agricultural "industries" and pursuits. Hence, looked at from this angle, too, the place of agriculture in the rural set-up is fairly distinctive. Naturally, therefore, the complexion of agriculture, would influence the shape and character of village life and rural structure. But lest this contention is taken to imply that the reconstruction of village life is impossible without the reconstruction of farming, we should point to the fact that the process of transformation in the rural regions is already proceeding apace, because of the multiple influences at work in the countryside, as we shall have occasion to notice in the latter part of this chapter, at some length.

Impact of the Farm Organisation on Rural Set-up. Farm organisation has an important bearing on the rural set-up. It is common knowledge that village structure closely follows the agricultural pattern. Scattered hamlets are a usual feature in the *scattered* type of farming, while farming villages are prevalent type where compact tillage prevails. Similarly, settlement villages grow where settlement farming has been in vogue. Group farming has been responsible for the rise and establishment of joint village communities while *proprietary* villages have sprung up along with estate farming and other forms of tenancy and joint-ownership. Recently, co-operative and collective villages, especially in socialistic economies, have also grown to occupy a prominent place in the rural structure. Peasant villages and communities have thriven in regions of peasant farming. In short, village community is moulded by the form of agricultural organisation. In India, for instance, village forms are considerably shaped by agricultural patterns, there are the *Bhairava* villages, where one particular caste tribe has settled and is the joint owner of farming lands there. In addition to this elementary consideration, we must draw the reader's attention to the form that agricultural relations

assume and the importance that they have in rural areas. Agricultural relations, about which we shall talk in greater detail, in a later chapter, are the resultant of two factors *farming systems* and *land tenures*. And agricultural relations are significantly placed on the rural canvas; if they belong to one pattern, the rural structure would have a certain mould; but if of another type, the village organisation is quite differently shaped out. On agricultural relations also depends the occupational distribution in the village—an important force in rural sociology. The nature of tilling operation also moulds village living; the mechanised system of farming would even directly, broaden the outlook of the ruralites and to some extent modernise them. In the preliminary stage, the nature of operations, does, to some extent, bear upon the organisation of agriculture, and this, in turn, has an influence on rural structure. The farmer does not like to live far away from the scene of his work; he likes to settle nearby. This is also relevant to the structure of the village. It is possible that several types of systems may prevail in the same region, but it is improbable that several types of cultivators inhabit the same village; villages are rather homogeneous.

VILLAGE TYPES

Turning our attention to village types, we find that there is indeed, a great variety of them. In fact there are as many types as villages, identity in the village structure is rarely to be found. Still, there are some broad features that are common to some of them; and this is what makes grouping easier and facile. In this chapter, we look at the village structure from a special angle, the economic and social one. And then there are regional, geographical and cultural differences, for the village is the centre of rural living and the mainspring of all types of activity. It would be idle to compare an Indian village with an American or a British one, for they are entirely different. As pointed out above, the set-up of the village is the resultant of several forces; historical, evolutionary, traditional, social and cultural ones. What we set out to describe here is not the lay-out of the village, nor its habitat, nor even its planning; we simply apply ourselves to its broad composition and structure. We are not bothered about the location or the origin of the village, but are concerned with the organisational description of the same. Thus village types would relate themselves to a sketch of the village organisation from the broad structural point of view. The types, detailed here, are not sociological, but agricultural ones. The emphasis is on purely rural farming aspects. Hence, this description would closely follow the farming organisation. The main varieties, which find a place in this treatment are *Scattered hamlets*, (which are only villages in name) *Farming types* (which are of numerous and many varieties), *Settlement villages* (cropping up as a result of the settlers choosing to live there permanently,) *Joint farms* (akin to the tillage type of joint farming,) *Group habitats* (formed as a result of the groups of a homogeneous nature) and *Proprietary variants* (rising up as landlords' villages). Thus

we find that these are on the pattern of the organisation of farming though not quite identically, for village communities could certainly not be ordered to settle down in a manner conforming to agricultural practices. There is some elasticity of structure and some variation from the strictly agricultural pattern, for example, we do not have a separate type to correspond to the decentralised type of farming, not even to compact and consolidated forms. This is what we need, stress, time and again, in the course of our discussion that there is some divergence, too, between the village structure and the farming systems, although the general pattern is closely followed.

Scattered Hamlets First among the various village types, and the most elementary form as also the loosest one, in the groupings, is the one commonly known as the *scattered* type. The general description is somewhat like this: there are a number of small cottages scattered all over the countryside, with farmers living on their farms, which are mostly scattered. This type, very closely, corresponds to the "scattered farming" type. But a distinction needs be drawn here, the village structure in this group does not correspond to fragmented holdings, for they may be prevalent in the farming villages, to be described in the next paragraph. The "scattered" type consists of several small cottages, planted on their respective farms, which themselves are scattered. This type is common to hilly tracts where the farms are not at all compact, but widely dispersed and away from each other. Each family is a sort of an independent unit, subsisting on its own piece of land and not sharing in the community's social living, except on certain occasions, communal gatherings or social festivities. There may be connecting and linking lanes or roads, which in the rougher terrain, follow the landscape. The *farmsteads*, as these scattered ones may also be termed, are in a way isolated from each other. Naturally, the system of peasant farming or estate farming (more frequently the former one) is followed in these hamlets. The individualistic spirit is what rules the scattered families: a sort of pride in their holdings and in their farmsteads. These farms belong to the variant described above as family farming for the whole family works on the farm. These hamlets can be hardly termed "villages" as now understood in common parlance. Because of its dispersed form the village in its spread is rather extensive, though communal living is very limited. Farming is diversified; it has to be, for the family secures most of its needs from the soil. Cultivation is usually intensive, in order that the best may be taken out of the land. Division of holdings may take place with the passage of time, so that ultimately, family living takes on the pattern of community living. Sometimes, efforts are made to reclaim more land, especially when the pressure of population on land increases, as for instance in Holland, where most of the land has been reclaimed from the sea in this way. The farmsteads are frequently located away from the main road, or the transport line, in some spot, having natural

advantages of water for irrigation and drinking purpose, or along streams or at the foot of hills. This type prevails in grazing lands.

Farming Villages. The next type of village organisation that we consider is a compact type of village in which the majority of the inhabitants are farmers. The lay-out of these villages may differ from region to region, but the essential feature is that the mainstay of life is farming. The holdings may be compact or fragmented, but the farmers and the tillers of the soil live together in the same village. This is a plastic type, admitting of several types of cultivation and not merely a single type. In the "scattered type", the farmers live on their farms, which are mostly scattered, while in this type the beginnings of social living may be noticed. This village organisation may prevail in hilly tracts, (though not necessarily so), for the scattered type is the favourite. There are several variants which are found along with this type of village organisation. Compact tillage is usual, but fragmented holdings could also be the prevalent type. The communal farming could also be undertaken under this village organisation; but under joint farming, village organisation takes the form of joint communities. The point that needs to be emphasised is that this form of village structure is quite common and prevalent. Farming villages have usually farms spread out in strips near the village. These villages are also characterised by *commons*, which may comprise woods, pastures and meadows. Generally, about a hundred families live in farming villages, though this need not be the rule. There may be one main bazaar where all the villagers may shop. This street may have the stores and the farmhouses on either side. If the village is a bit larger, there may be side streets and cross lanes, with houses on both sides. Married farm labourers may also live in these villages. A major factor, determining their location is the availability and accessibility of water, so essential to cultivation. That is why most of the villages in India are located near the banks of the rivers and the streams. Grazing and pasture lands are other considerations. In the medieval ages, considerations of security also influenced location: some villages were located on relatively inaccessible sites because of the need for defence against marauding tribes. But with security the older villages, began to be located near highways and on more accessible sites. The farming village organisation has the distinct advantage of mutual protection and security from external aggression and intervention; consequently, the village becomes self-sufficient, uninfluenced by outside political developments. This by itself is a factor potent enough to perpetuate that form of life to which the villagers have long been accustomed. This is common throughout the world, except in the U.S.A. where the settlement type prevails. It makes for a closely-knit organisation of the community by hindering the development of extreme individualism. Provision of institutional services is possible on an economic basis, while the provision of social utilities on a co-operative basis is possible.

On the other hand, completely self-sufficient village community, (and it may be possible that this natural process of development is attained by the farming type), easily becomes stagnant, for the patterns of life become so entrenched at individuals that they rarely depart from the same; chances of change or variation are quite remote. Community idiosyncrasies and sentiments and mores and modes of living become firmly stratified and there is little room for elasticity of living. At the same time, there is greater probability of diseases and pests spreading both among animals and farmers, once an infection takes root. We must also notice the drawbacks of this type of living for commercialised agriculture, which usually calls for large-scale farming, which in turn is impracticable. Farming is more or less the family or even the subsistence type. Another thing to be noticed is the land hunger which characterises this type of agricultural villages.

Rural Settlements. In the "new" countries like the U.S.A. they have developed *settlement* villages. The American nation was settled by a land-hungry lot, who were keen to acquire land even at a social cost. As waves of settlers came and settled on lands (*which they acquired free*), these villages developed, first as purely isolated types, and later as more compact and crowded ones. These are usually smaller than the farming villages, but definitely larger than the scattered hamlets. They lie midway between the two. Earlier settlers were a conglomerate type, sometimes representing several European nationalities (in the case of the U.S.A.), but even these acquired a homogeneous appearance. The benefit was the blending of creeds, classes, nationalities, and moralities of all settlers who freely intermarried and thus evolved a homogeneous village culture. Social organisation of these villages was absolutely non-traditional, there being no institutions, or laid out patterns of life about which these communities could be grouped. Sometimes, villagers lived on farms, while in other cases, in the central place, "the village". In case they belonged to different races and nationalities, they preferred to live on their farmsteads. Settlement villages fall into two categories, the *homogeneous* and the *isolated*. In the first type where homogeneity has been achieved through a process of social evolution, the village is composed of inhabitants descended from settlers belonging to the same race and creed. This homogeneity has been responsible for the development of social traditions and social living according to set patterns of life. The development of social services has been more rapid and rather cheap. Social contacts and institutional relationships have developed. With the passage of time, the settlement village (belonging to the homogeneous variety) became a farming village, alluded to above, or sometimes a joint village, to be described below. There is a lot of intercommunication in the village and the countryside has the appearance of an extended village street with all the houses and an occasional social centre, say the school or the church, or the trade centre. This type combines the advantages

of the compact village with that of the scattered ones. While the individual lives close to his farm in proximity to his crops and the livestock and their product, he can also maintain close contact with his neighbours and with social institutions. Special services are also maintained at a cheaper cost. Most houses are lined along the main highway, which may be the road or the river, while the land to be cultivated is laid in strips. In short, this variant is a sort of *mixed* type, being both *scattered* and *compact* having these characteristics. The *isolated* type is, however, more common, and here group unity is not to be found, in the movement of settlers to more fertile lands; earlier unity underwent a breakdown. There was no integrated social life, for that required a common tradition, a similarity of population stock and a homogeneity of nationality of background. Unified agricultural settlement could not, therefore, be set up. If a blending came about, that was purely temporary and of a transitory nature. Reinforcing this were the various pieces of legislation enacted with a view to encourage these settlements; these laws required a man to live on his land for quite some time before he could be recognised as its owner. These factors speeded the formation of isolated types of settlement villages. Social action and unified social sentiment are hard to achieve. There is little contact with the devices that may bring social pressure to bear upon him. But there is the other side of the picture, too. The isolated farm has made it possible for the cultivator to till large tracts of land. In the U.S.A. in particular, the way was paved for the mechanisation of agriculture. Family solidarity was also secured, for the family has to brave the hazards of an isolated living. Greater was the care expended upon live-stock; responsible for the evolution of the specialised livestock farming, so characteristic of the new world, the Americas and Australia. With the development of the speedy means of transport and communication, however, the isolation of the farming family tends to be broken. This, in turn, spells great prosperity, especially with the earlier handicaps removed. The costs of the settlements, we find, have been rather excessive. Enterprising farmers, living on their farms, lay an over-emphasis on work. Fewer social contacts interfere with work, life is, consequently, lived as a life of action. High costs are incurred for such services as running water, sewerage facilities and electricity, for they have to be provided individually. Often the expenses are so excessive that the farmer may go without these services, because he can not afford these. Social institutions, too, may not be afforded, for they were also rather expensive, now has the individual farmer a school for his children. At best one-room schools and similar smaller units are set up by a conscientious administration in a central place, in order to serve all isolated farmsteads. From the point of view of road building, its initial costs, maintenance and upkeep, the cost is high for the *solitary* type of the isolated village settlements. In short, the isolated settlement community is rather an expensive

experiment in rural evolution, and preserves its individualistic character. Socially speaking, the neighbourhood is the most important primary social unit for this type of diversified village. The neighbourhood arises, in most of these communities, for purposes of self help and centres around an institution, say a school, or church or a recreational centre or even a retail store. This is the first punctuation in the process of social evolution from the isolated settlements to the homogenous variants, for these institutions in the common neighbourhood are potent in sustaining a group consciousness, though the process is often spread over long periods of time. Gradually, therefore, the isolated settlements evolve into the homogeneous type. This process, though almost universal, has been more noticeable in the Americas. In India, too, the periodic markets and *mandis* provided good opportunities for social intercourse for the isolated types of village settlements, especially in the newly colonised regions, like the Canal Colonies of the Punjab. Greater interdependence is generated in this socio economic process. Not necessarily the neighbourhoods were quite isolated central places, there were also the urban markets, when the settlements were slanted near urban areas, while the neighbourhoods in the vicinity of the towns always tended to disintegrate, their functions being usurped by towns. Even under the dynamic process of rural evolution, these patterns have tended to persist, and the locality groups have also influenced the newer forms of social organisation. Out of these neighbourhood centres—the most important from the point of view of economic analysis—arose the farm trade centre, which in course of time also became “service centres”, because generally speaking, the professionals tended to live in these trade centres, rather than in villages.

Joint Communities The settlement villages become in the process of social evolution what may be termed as the “joint communities,” based on the foundations of joint farming, in all its varieties. These villages grow up out of communal farming and joint cultivation. When each family gets land to cultivate, as allotted by the village community, the way is paved for the formation of joint villages. Communal farming, as we learnt in the last chapter, is a relic of Feudalism. The village land being held in common, the families could get any piece to cultivate. The ties, now binding them, are cultivation of common land and the village common. The cultivators descend from one common ancestor, the bonds common to the villagers are those of blood and kinship. Again, in these villages, land is inalienable, therefore, the villagers have to live jointly, their responsibility for the payment of land revenue and other dues is also joint and indistinguishable. Their cultural traditions and modes of living are identically the same. It is the customary laws that operate in these communities, this is another cementing factor. The settlement types also convert themselves into joint communities, through the process of social evolution. The homogeneous villages, in the course of time, (by holding land in common),

turn themselves into joint ones, for these homogeneous communities are often descended from one common ancestor. The joint villages therefore, fall into three categories, the *settlement* farming ones, the *communal* farming ones and *joint* farming ones. Though indistinguishable apparently except that one can recognise a type by tracing it to the origin of the village communities, the characteristics of each are typical of the type to which it belongs. For example, in the joint villages, which owe their origin to settlement farming, the stress on the colonisation aspect and the formation of the village is quite distinct, there being a long range of houses along the main highway and the tracts of each farmer being separate; it is the loosest type of the joint community, the only bonds in it are those of original common descent, or in addition to this, those of joint ownership, if that be in vogue there. In the communities, which owe their origin to communal farming, land is the property of the villagers and cultivators are often rotated on it, the bonds are those of common lands, which belong to everybody and the supreme village body. The cultivators do not ordinarily live on lands and no permanence of cultivation rights could they claim. There is absent even a common descent, or origin. It is not a homogeneous lot that lives in the village, but people belonging to different races and creeds. In the villages taking after a joint system of cultivation, the factor most pronounced is that of common ancestry and descent, with indistinguishable and joint ownership of land. Thus there is an elasticity of organisation among the different types of joint villages. We have noticed the main and the more important types, according to origin and evolution. The economic aspects are quite outspoken: the village organisation is very closely well-knit, and there is close interdependence among villagers. An excessive interdependence and kinship may also kill all private initiative and the individual may have to submit to the will of the community. The village order may stratify into channels carved out by tradition and custom, to the exclusion of all others. This type of organisation is common among the ancient communities, like the Indians, the Chinese and the Spaniards, where respect for old order and custom is of the superlative. Life runs along the grooves of custom; the hold of religion and superstition is fairly strong. Social contacts are on a traditional level and the character of village institutions ancient. Sometimes even payments to the labourers, engaged by village community or cultivators, are made according to custom, while the distribution of occupations is very narrow and limited. The form of the village is compact and its life closely intimate and interwoven. Certain advantages may accrue from this type of social organisation; inertia enters the rural sphere, in a much stronger manner than in other mores of rural living. The ruralites have all along stressed the values of security and self-sufficiency to the exclusion of such considerations as those of comfort and luxury; hence the joint villages have, by making the poor indi-

vidual subservient to the domineering community, rendered him inert and unenterprising. The private acts of individuals assume more social significance, the individual has hardly a personality of his own apart from that of the community to which he belongs and of which he is product. There is little chance of progress except when the community, as one body, makes an endeavour to achieve it but that may also go against the established and age old customs and traditions of farming and living and this may be resisted. But with the impact of industrialisation and urbanisation, this type of communal living is now breaking up, the organisation disintegrating and the bonds of kinship loosening, with the result that the individual peasant is asserting himself and trying to get away from the shackles of the community, which too, is weakening due to political and economic forces.

Group Systems Under this heading, we analyse various modern types, that have evolved as a result of the introduction of collective farming and co-operation. The collective farm, or the *Kolkhoz*, is the typical producing unit in the Soviet Russia. The land is owned by the state, and the members of the *Kolkhoz* cultivate it. The cultivators live in villages and own houses and gardens. The management is in the hands of the state and the farmers are paid tenants or shareholders. Mostly there are the trained technicians who take charge of machines and tractors, as also manager and government employees, who direct agricultural operations. This elementary knowledge is essential to an understanding of the type of the villages under collective farming. The village community is not so well knit, though not loose either, for they have usually an interest in the same farm and being entitled to 'bonuses' out of improved and increased production, they have the common linkage of cultivating interests. Sometimes they have also a voice in cultivation, private initiative is then recognised and given its place of importance. But once decisions have been made and given sanction by the higher authorities, there could be no change brought about. In short, the individualistic structure is not recognised in the sphere of farming. It may be emphasized that the villagers have no common bonds threading their lives. Hence the organisation of the village is usually individualistic and the village community not very strong. It is a loose organisation, run on regimented lines. There may be some amount of limited authority and autonomy for the village body, but none so effective as in the joint villages. The lay out of the village is carved by the external authority, the growth has not been evolutionary, except in very rare instances. The form of the village may resemble either the compact one or the settlement one, there is no rigidity about it. On the whole, the village has access to a number of modern amenities of life and not at very high costs for the state takes it to be its own responsibility to extend these. The collective villages have not very many distinct characteristics except that the village has no lands for cultivation except those under the authority of the state, who is the ultimate owner. The village group

is homogeneous for all who participate in the work of farming. There is a lot of division of labour on these farms due to extended mechanisation and power-driven machinery being employed they live in the same village. The modes of living are neither customary nor traditional but those dictated by the external authority. There is identity of outlook in these villages : they are conglomerate types.

Co-operative Variants. Turning our attention to the co-operative farming villages, we find that their composition, structure and organisation is not a little different from those of collective types. The essence of the co-operatives is decentralisation and democratisation. The middleman is sought to be eliminated. There are *four* distinct types of farming, as detailed in the last chapter; but we do not propose to discuss the characteristics of each type in its bearing on the village structure. These types do not reflect upon the village organisation, since the farming types pertain to internal organisation and do not bring about structural changes in village structure. What matters is the co-operative spirit that pervades the cultivators. The bonds that thread their lives are voluntary and self-imposed, not traditional nor even those which may be due to the regimentation brought about by external authority. Ranging from the loosest form of the co-operative organisation to the closely integrated one, the spirit that does pervade the community is the co-operative one. Elasticity of farming organisation reflects itself in the bonds that link the villagers. Under the loose forms, village organisation is not so closely integrated, while under the more closely-knit farming systems, the village community strengthens itself. Still the element of progress is present throughout and asserts itself in the mores of co-operative living. The individual does not suffer exploitation at the hands of group or a community. Tradition gives way to enterprise and initiative, but the lay-out may well be retained as the traditional one. The relations between the villagers are no longer those of the customary type, but of equality and fraternity. Unlike joint villages, this form of structure is to be distinguished by the closeness and associateship of the villagers, who may have joined hands out of a realisation of the advantages of co-operation and not out of social necessity or out of considerations, extraneous to farming processes. It is to be appreciated that if successful, this form of village organisation is quite plastic and can accommodate types of people belonging to all classes. The one great effect is that the village community gains strength and is able to do a lot for the betterment of the villagers. This strength is derived from the voluntary surrendering of personal and narrowly selfish interests by villagers, and not under the dictates either of custom or of political authority. Out of the two forms of group system, that we have considered, the co-operative is more plastic and humane. But it may not endure, being too voluntary, withdrawal being easy, too.

Proprietary Tykes These are distinctly of a separate category, not included in the above list. The proprietary villages mostly conform to the system of farming popularly known as "estate farming", described in the last chapter. To recapitulate, this farming system is landlord type, the land belonging to one landlord. The villagers are usually tenants. Whatever the type of tenancy that may prevail in the estate, the village lands are the property of the landlord and the farmer-tenants live there with his permission and occupy the same at his pleasure. Even if they have rights secured by means of purchase of their residential accommodation, these are of no practical value, for the hold of the landlord is rather strong and none dare defy him. Experience has taught that even in those regions where the rights and privileges of tenants are protected by law, the farmers feel very much helpless and have no means to get the law enforced and thus protect their interests and rights. And then the landlord has an alternative open to him, ejection of the tenant from his lands, the unemployed cultivator has nowhere to go to and has to leave the village in desperation. The village community has no say in the administration of the village, they do not have village common, as in nearly all other types of villages. The community is composed of serfs living under pressure from the landlord or his servants. Although it may be supposed that the interests of the villagers are more or less identically the same, and all of them suffer from the same type of exploitation, it is strange to find how disintegrated they become, there is no unity of purpose nor fellow-feeling nor even any sympathetic interrelations between them. They all stand demoralised, therefore, in order to curry favour with the landlord, they are very much disunited. While an enlightened and conscientious landlord may try to improve the environments in the village the usual run of the overlords are absentees, enjoying luxurious living in the cities, and not caring for the lot of the villagers, so long as they get their pound of flesh. Absentee landlordism being the worst type of estate farming, the villagers are very helpless, under this particular variant. If and when the landlord lives on the estate, he does make improvements in village sanitation, and tries to arrange for certain amenities for his village, if only to serve his own selfish ends, but our point is that the villagers do gain thereby. Sometimes the landlord may, even while living in the same village, so isolate himself that the villagers are thrown to the rotten locality and excluded from the various services and amenities of life that the landlord may have been able to get for himself. On the whole, therefore, the lot of the villagers is quite deplorable under this organisation: they are serfs.

The Inference The above rapid survey of the village organisation has been a bird's eye view of the subject. Rural sociology is typically local, the rural types vary from region to region and locality to locality. It must, however, be re-emphasised that village organisation is a product of the historically evolutionary process of social organism. The village structure is undoubtedly of

the evolutionary type, and it may be rather difficult to correctly categorise each village in terms of this classification. We have only tried to bring out the common characteristics of each type as broadly borne on the social canvas, in relation to agricultural organisation, though we have not rigidly adhered to agricultural and farming systems as such. Our survey has been of a descriptive nature. The scattered hamlets were a loose type of rural organisation, not strictly speaking comprising the village, for it is only by some stretch of imagination that we could describe it as village. The farming villages, we discovered, were more compact in their structure and presented the "appearance" of a village. Rural settlements were either homogeneous or isolated one, both having some special characteristics. The joint communities, we noted, flourished only at the expense of the individual's freedom and liberty: the cultivator was reduced to the status of a dependent person, living as one over all group. It was also noticed that these communities were decadent, due to several social and economic forces operating in the countryside. The groups that comprised them were either settlers, or descendants of a common ancestor or some farmers brought together by historical forces. The group villages, which conglomerate comprised the collectives (of the Russian design) and the co-operative farming villages, are not so potent as to efface the single farm family's entity, though in the co-operative variant there is greater scope for the exercise of individual initiative and enterprise, and therefore less regimentation than in the collective types. But, still, the collective villages have an eternal authority to plan out their lives and some sort of regimentation appears to be enforced. In the proprietary villages, both the absentee-landlord variety and the resident type, the individual has little voice either in the structure or the social framework; in the first type, the provision of elementary and primary amenities of living is conspicuous by its absence, while in the latter one, the farming community could incidentally benefit from the provision of certain amenities, purposely provided for the landlord. The farmer's personality suffered a lot, as the villagers are merely serfs, spying on each other.

THE CORRELATION

Having studied several types of village organisations we discover the interrelations that might exist between the village types and the farming systems. This subject of village organisation is being studied in continuation of farming systems, for there is a relationship between the two. The major occupation in the villages being farming, agricultural organisation does influence the rural way of living and the organisation of the community. We shall now try to see if there does exist any correlation between the two. We need not necessarily take each single type and see how the correlation establishes itself; an effort was made above to link the two and understand the communal working in the light of farming systems. First of all, we shall see the organisational impact of the farming systems on the structure,

lay out and organisation of the village community, this by itself is quite a significant subject in the study of Agricultural Economics. Secondly, we analyse the effects of certain systems of farming on the set up of the village, this is the dynamic aspect of the evolutionary growth and rise of modern villages in advanced, backward and transitional economies. In the next place, we shall correlate the organisational structure to the system of land tenures, to which of course, we attend in a separate chapter, the treatment in this chapter, however, is from the point of view of village organisation and not from that of land tenures and their bearing on farming systems. We round off this analysis with a summing up of correlation. It need not be anticipated that correlation would be established in a mathematically rigid manner, on the other hand, the form organisation, not always lay down the lines of rural and village organisation, for there being no rigidity either about it or about the latter, that without a hypothetical type of organisation a particular type of farming would not be possible to pursue. In all human organisations and structural patterns, whatever correlation establishes itself is purely accidental and not before an analytical survey undertaken by the theorist. The ends in farm and village organisation as we shall have occasion to notice, are not identical though they may be similar. This analysis of the correlation would be instructive in that it would shed light on various rural problems and enable us to visualise the limits to which existing patterns could be moulded so as to fit in with various types of farming with which we may try to experiment within the rural sphere, as also give us an anticipatory idea of the social forces consequent upon these types.

Organisational Impact The correlation between village organisation and farming systems is to be studied. This correlation is not very distinct though, still, it would be an instructive study. While the farming systems are spread over a very large canvas, the village organisation is rather narrow in its sphere. It appears, therefore, that the village organisation of a certain type does embrace varied systems of farming. The farming systems do not necessitate parallel types of village to come into existence. More often than not, the formation of village precedes the systems of farming that operate in a certain rural structure. A certain type of village living is established, and then a certain system of farming, suited to that organisational set up, brought into existence, but later on because of the evolutionary process in social and economic spheres, farming assumes certain other forms while the village organisation remains static. This appears to be a valid explanation of the lag between the organisational types and the farming systems. And then the institutional factors and forces too, must be taken into account, the structure of the society also has a bearing upon the village organisation, though it may not influence farming system to such an extent. Thus the village organisation is resultant of such forces as operate on the social canvas, while the farming

systems evolved as a result of certain other forces. It is evident that the organisational set-up of the village often arises out of certain historical factors and forces; even a sense of security and mutual self-defence has also been potent enough to bind villagers together and force them to live in a joint community or in a group system even though the farming system might no longer be on the joint pattern. Thus it is that village types might persist even when farming systems have undergone a change. The point that needs re-emphasis is that the organisational and structural set-up of rural life is an evolutionary process, which fashions itself out as the social, cultural, historical, political and economic forces act and react on each other. The village organisation need not always be moulded by farming systems, though the broad outlines may deviate a little this way or that by the facts of farming. Not that the farming systems are divorced quite from the organisational set-up of the village, but that the same is not determined by the accidents of farming. It is possible, however, that farm patterns may indirectly influence the course of changes brought about in the village organisation under dynamic processes. The impact of village organisation on the structure of farming is not so glaring as the farming systems are something external to this organisation; this may not hold true of some such types as the proprietary and the landlord villages. Still both remain rather interlocked and intertwined, though indirectly.

Farming Effects. The farm organisation has, however, an important bearing on village structure. We detailed the various aspects of cultivation in different village types. Still, to recapitulate, we may re-examine each type from this point of view, and try to establish a relation between the two, if possible. For instance, the scattered type is nearly always co-existent with scattered farming, which may not be confused with fragmentation of holdings. The farming villages, on the other hand, embrace a larger number of farming systems; the range of farming types, prevalent in this village structure, is rather wide. This type of village is the most common and plastic. It appears that these villages came into being as a result of the system of peasant farming which might deteriorate into other types later on. Fragmented holdings, which may be the result of successive inheritance, may form the farming type prevalent in the farming villages. It is also probable that further deterioration takes place and the small holders turn into tenants and farming village gets to be tenant village. Decentralised farming may also be practised in the farming villages. In short, one could not be very certain about the system of farming that may be practised near the farming villages: any variety of farming may be in vogue. In the rural settlements, however, settlement farming is usually practised, for the simple reason that this type is of recent growth and has evolved as a result of the settlers selecting that particular site for residential purposes. Both the homogeneous and the isolated forms arise as a direct result of cultivation processes; cultivation preceded

village formation. The homogeneous type may degenerate into some other type, such as the landlord or the proprietary ones but the isolated one does not so soon lose its own form, it may grow into a scattered type of a loose village, but that only with the passage of time. Still, settlement villages are liable to pressure from the dynamism of change. Joint villages are the most static form of village organisation and very seldom change even under the pressure of change. From inception to development, the essential feature of these villages is either common ancestry or some such factor as common kinship, that is why they do not change, though with the passage of time the self-cultivating joint owners become absentee or those having ousted other owners to other places in search of employment or work. The group systems, too, are similarly situated and though at first of a loose variety, become rather well knit as they reap the advantages of joint farming, in the co-operative variety, the bonds are voluntary, while in the collective villages, they are external, and communal living is not so intimate. The proprietary type is correlated to estate or landlord farming.

Land Tenures Another influential factor, bearing on the internal structure of the village is the nature of land tenures which means the holding of land and its cultivation the relationship between the actual tiller and the actual owner of land. Under *Zamindari* or the landlord type, the structure of the village tends to be the proprietary type with larger numbers residing there. While under peasant proprietorship, majority of farmers are peasant cultivators living on a basis of equality under metayage, the complexion of the village is neither exclusively the farming type nor even that of the landlord proprietary one, but resembling rather a compact type. Land tenures influence and shape the internal organisation of the village in still another manner, they are the determinants of agrarian relations in the village, which in turn, are very effective in moulding its life. So potent are land tenures in moulding rural relations that there are, in certain countries, like India, villages known after the system of land tenure prevalent in a certain area and also recognised as such. True, that agrarian relations may be effectively influenced by such other factors as agrarian legislation, (which we shall have occasion to discuss in a separate chapter) but the point at issue is that land tenures, by themselves, are the causative forces responsible for the initiation of such legislation. For most agrarian legislation is enacted to soften these relations, hence the causative factor is land tenures. In still another manner, do land tenures affect the character of village organisation they shape farming systems, even though very remotely and indirectly, through this they influence village organisation in so far as the same is moulded by farming systems to some extent. This is not all, land tenures also determine the traditions of rural living, the old established customs are often the result of land tenures which may have prevailed in certain villages for some time. Some customs, e.g. that of presents to be made to the landlord and forced labour are born out of

land tenures. The process of village evolution is composite and one factor alone is never responsible for village life as it is being lived at one time. Although we shall discuss land tenures in a separate chapter, it should suffice to understand here the place they occupy in the village organisation whether directly and effectively, or indirectly and remotely through farming systems or land tillage. A word of caution here : it need not be taken for granted that land tenures are of an exclusively pure type ; mixed tenures may be also found in the same village : in fact this is the more usual case.

Miscellaneous Factors. We must not conclude, in the light of this analysis, that the above are the only three forces responsible for an effective correlation between village types and farming systems. Other factors and forces do operate, though they may not be so glaringly outspoken and pronounced. Some sociological forces, like tribal organisation and caste system, etc., are also operative in this field. It often happens that tribal structure leaves its imprint on the village which often closely follows that form. Similarly, in countries like India, caste may be an influential and effective factor making for such inter-relationships, and shape the internal structure of rural areas. It is not unusual that one comes across villages which bear the name of a clan organisation or the nomenclature of a certain caste. Similarly, there are religious forces which may give rise to the pattern of a village : certain sections of the population may have migrated to a certain outlandish place in the same country in search of religious freedom and liberty to follow their own practices, or even to another country in the same quest; consequently the village structure follows the pattern sanctioned by religious practices. *Quaker* villages were set up in the Americas, and still persist, though not in the same rigid form. Then political causes may have led to the formation of rural communities, and the organisation of an alien country may have been imprinted on the rural set-up which has come under the influence of aliens. The Spaniards implanted their own village types on the hapless natives of Mexico, Ecuador, Peru and Bolivia where they did contribute most to the communal ownership system of farming and the corresponding village organisation. Cultural factors may also have been responsible for the growth of village in certain cases. In the same country, and sometimes in the same agricultural region, different types of villages may be found, not on account of differing systems of farming but on account of differing cultures. Social stratification, too, may influence the day-to-day life in the village. Even though the farming pattern for all inhabitants may be identically the same it is evidenced in the villages in India, that the "untouchables" used to live apart from the rest of the community and this factor affected not only village organisations but also rural relations. In short, this section may be rounded off with the remark that the effort to establish a correlation between the village

structure and the farming systems may not be very fruitful, although a correlation does apparently exist between the two, but not so intimate as one would like to imagine and expect

RURAL CHARACTERISTICS

Having understood the relationships between the village set up and the farming systems, we now proceed to grasp the essentials of the rural society, its farming aspects and framework, certain characteristics are distinctly rural, while others distinctly urban. There is some difference between the two and both are quite different. Certain rural characteristics may be noted. The society is marked by a certain amount of conservatism, it is not so progressive as its urban counterpart, the village is a smaller unit than the town and the city, it is not so modernised as the city is, and (except in recent times), rural areas are not so dotted over by industries and factories as towns. In the villages, we find that there is a predominance of agricultural pursuits, while in the cities there is no emphasis on outdoor activities. While in the villages the distribution of occupations is limited, in the towns the occupational canvas is very large. Thus we find that there are distinctly urban and rural characteristics, which mark village society in a pronounced fashion. But the purpose of this analysis is not to institute a comparison between rural and urban areas but simply to stress *rural* features. In other spheres of activity, too, the rural society has distinct living, and we must notice certain more pronounced features in brief. The rural areas are marked by an affinity to nature which influences their outlook on life, that is why they wear a conservative outlook and are not so progressive as their urban counterparts. Again, family affection plays a very important part in the lives of the villagers may be because farming is invariably a family enterprise, or because of the lack of outside interests for the members of the family. The institution of 'family' has been preserved in the rural areas with greater care than in towns where disintegrating forces have invaded home-life. Wife, in particular, is regarded as an indispensable assistant in the farming chores. Again, probably because of this factor and also because of the fewer external entertainments available the birth rate is usually higher in rural areas. There is also a universal tendency, in the villages, to early marriage, out of sheer necessity. Religion, too, exercises a stronger hold over the ruralists than on other sections of the community, reason villagers are not educated in the arts of logic or scientific methods and therefore are fertile for the priest. The point that needs to be stressed is that there are distinctly rural features as noted above, although the most distinguishing ones, e.g. self sufficiency, integration and so on, will be noticed, in this connection.

Self sufficiency Among the more prominent and distinct characteristics, self sufficiency is important. Village life is marked

a preference for self-sufficiency. Especially in the more backward regions is this characteristic rather pronounced. Complete self-sufficiency is even theoretically impossible. What we imply by this term in this context is only that the village communities are rather independent of urban suppliers. With food and shelter secured, they do not bother much for other necessities. The most essential necessary of human life, food, they grow, while in regard to their clothing needs, they make their own cloth, which, even to this day, is the practice in backward and some advanced rural economies. The economic standards in villages, being rather low, villagers are not addicted to modern amenities of life. Scattered hamlets have a central bazar running, where one can shop. Similarly, compact villages and farming communities, too, have shopping centres to meet their needs. Rural settlements, both the homogeneous and the isolated types, have a central place where to shop. In the joint villages and the group communities, also, the central shopping centre is more or less an indispensable complement to life. In short, all types, whether scattered or compact, big or small, have shopping places, which however humble they may be, are still sufficiently equipped to meet all their needs. Analysing their needs, we find that the villagers' necessities of life are rather few, mainly because of their ignorance of modern life and their aversion to urbanish ways. Their conservatism, too, stands in their way of adopting the modern living. And then they are suspicious of urban modes. Tardy means of communication and transport, too, have been responsible for this outlook. Villagers have always been much engrossed in their own families and their neighbours to the exclusion of external interests. Regional cultures have found their preserves in villages; this also affects villagers who limit their needs and wants to their traditional mores. Religion has been an active force in the rural set-up. The preachings of all religions have advocated minimisation of wants and discarding of what they have chosen to term "luxuries." This, in turn, has limited the villagers' purview very considerably. Therefore, rural regions have only made use of the locally available means of satisfying their wants, and later on settled down to this traditional living. Self-sufficiency is breaking down, where the modern spirit has percolated to the rural masses, as we shall see in the next section. Still, it is a major factor in rural life, in a larger part of the world, especially backward regions, where tertiary industries are not yet rooted.

Integration. Most village communities are closely knit and interwoven. This is also related to self-sufficiency. In the village, not only are people interested in everybody else and thus lead a communal life, very much unlike the city where a person living in one flat may not be known to another in the adjoining one. In the rural set-up people share their joys and sorrows in a mutual manner and come to each other in times of distress and need. The communal spirit may arise

out of initial insecurity which prevailed in the older ages, when law and order was not so well established. And later, it may have become a traditional way of living among villagers. This is one aspect of integration, quite conspicuous in the rural life. Another aspect is more important, though less apparent: this is that villagers produce what makes them self-contained. One man usually produces what the other needs. Though this system of integrated production has undergone some decay in recent years, still this does hold true to a great extent. The bother of having to market the produce outside the village is too much for the peasant, he prefers to sell it off in the village. That is why most rural productive patterns are usually complementary. A third aspect is occupational distribution in rural regions: this is complementary and on a self-sufficient basis. It is not implied that the occupational canvas is large, on the other hand it is quite a narrow range. The occupational distribution is such that nearly all the more important vocations (from the villager's point of view) are found. Professional complementarity is another important aspect of what we have chosen to describe as "integration." Yet another point is that the village is an integrated unit, from the point of view of administration: there is a considerable amount of self-government even where the modern concepts of democracy are not yet implanted. In the ancient communities, especially, this village autonomy had found such practical expression that villagers led their lives unaffected by the rise and fall of kings and the ups and downs of dynasties. Thus *fourfold* integration swayed the village community. Admittedly, this economic feature is on the decline these days, still in the backward part of the world, this particular characteristic rules the village. In fact, integration is so important that its various types and kinds may be considered and more attention devoted to it. In the next paragraph, we intend studying the dual aspects of economic integration in the rural areas, the horizontal and the vertical ones. These twin aspects are important from the analytical point of view.

Vertical and Horizontal Types The two types of rural integration, that we propose to consider, are *vertical* and *horizontal*. In the former integration proceeds on the basis of one unit feeding the other. In the sphere of agriculture, for instance, some farms may grow feed for dairy herds on a contract basis, or otherwise and in return obtain manure and dairy requirements. Both the cattle and the agricultural farms become complementary to one another, and one could not function without the other. This type of integration is described as *vertical*. Its essence is that no process is complete by itself, one process is completed by and dependent on the other. This is common in the West and especially in the Americas, though it is not absent in the ancient world. This resembles what economists may term as "division of labour." The benefits that accrue from this system are both economic

and social : the economic advantages are derived from the division of labour, while the social ones make for more intimate communal life and more interdependence among villagers. But this practice is not possible on scattered farms, nor on peasant farming, nor even on the settlement types for obvious reasons. All these farming types have to be self-sufficient within the framework of individual farm and are family types, self-contained within themselves. Hence, it is that vertical integration could not be practised on them. Scattered hamlet types find it difficult to practise this variety of integration, while settlement villages, too, may not be able to run on these lines for the simple reason that their individualistic outlook stands in the way of its adoption as that means total interdependence. For these types, there is another variant, the *horizontal*. This particular variety is conspicuous by its completeness of farming operations. Each farm may be regarded as a distinct unit, complete in respect of all operations that it has to undertake. Many such farms may exist and it is their total supplies that may go to make the full supply needed in the village. Nearly all farming units are of the same type, though slight variations in their structure may be found. Still this integration ensures self-sufficiency for the village, in respect of the supply of basic necessities of life. Integration of the village is thus quite an important aspect of rural life and has twofold aspects, the vertical and the horizontal ones. The former vertical type of integration is more scientific, more useful and more enduring from the social points of view and the economic angle, while the latter type, though more common, is not of such advantage, nor of such economic significance, except that it may also ensure self-sufficiency.

The Village Common. The next important and distinctive feature is the village common, characteristic of all rural communities, whether ancient or modern, advanced or backward. It appears that the village common is essential to life in the village which it has, earlier, been remarked is communal and rather intimate. It provides a forum of communal life; it is the joint property of village, could claim to have exclusive rights in the same. This include the common grazing land, the common forest common playgrounds and recreational grounds. In fact, common has persisted through the ages; it seems it is a part of village life, for nearly all types of village organisation an important place of prominence assigned to it, even in the types, the village common is recognised as belonging to the village and not the landlord. Customary usage has given to it an inalienable character. All have equal rights of sharing the common and using though not exclusively. Village councils are held and important decisions, affecting the life of the community made, while it may be the place where judgments are delivered by village communes or *banchayats*; disputes are settled by common consent in the village common, which, therefore, has a special sacrosanct significance. Several

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Vertical and Horizontal Types The two types of rural integration that we propose to consider, are *vertical* and *horizontal*. In the former integration proceeds on the basis of one unit feeding the other. In the sphere of agriculture, for instance, some farms may grow feed for dairy herds on a contract basis, or otherwise and in return obtain manure and dairy requirements. Both the cattle and the agricultural farms become complementary to one another, and one could not function without the other. This type of integration is described as *vertical*. Its essence is that no process is complete by itself; one process is completed by and dependent on the other. This is common in the West and especially in the Americas, though it is not absent in the ancient world. This resembles what economists may term as 'division of labour'. The benefits that accrue from this system are both economic

and social : the economic advantages are derived from the division of labour, while the social ones make for more intimate communal life and more interdependence among villagers. But this practice is not possible on scattered farms, nor on peasant farming, nor even on the settlement types for obvious reasons. All these farming types have to be self-sufficient within the framework of individual farm and are family types, self-contained within themselves. Hence, it is that vertical integration could not be practised on them. Scattered hamlet types find it difficult to practise this variety of integration, while settlement villages, too, may not be able to run on these lines for the simple reason that their individualistic outlook stands in the way of its adoption as that means total interdependence. For these types, there is another variant, the *horizontal*. This particular variety is conspicuous by its completeness of farming operations. Each farm may be regarded as a distinct unit, complete in respect of all operations that it has to undertake. Many such farms may exist and it is their total supplies that may go to make the full supply needed in the village. Nearly all farming units are of the same type, though slight variations in their structure may be found. Still this integration ensures self-sufficiency for the village, in respect of the supply of basic necessities of life. Integration of the village is thus quite an important aspect of rural life and has twofold aspects, the vertical and the horizontal ones. The former vertical type of integration is more scientific, more useful and more enduring from the social points of view and the economic angle, while the latter type, though more common, is not of such advantage, nor of such economic significance, except that it may also ensure self-sufficiency.

The Village Common. The next important and distinctive feature is the village common, characteristic of all rural communities, whether ancient or modern, advanced or backward. It appears that the village common is essential to life in the village which it has, earlier, been remarked is communal and rather intimate. It *provides* a forum of communal life; it is the joint property of villagers and none could claim to have exclusive rights in the same. This *common* may include the common grazing land, the common forest tracts and the common playgrounds and recreational grounds. In fact, the village common has persisted through the ages; it seems it is a prerequisite of village life, for nearly all types of village organisation have an important place of prominence assigned to it, even in the landlord types, the village common is recognised as belonging to the villagers and not the landlord. Customary usage has given to it an inalienable character. All have equal rights of sharing the common and using it, though not exclusively. Village councils are held and important decisions, affecting the life of the community made, while it may also be the place where judgments are delivered by village communes and *panchayats*; disputes are settled by common consent in the village common, which, therefore, has a special sacrosanct significance. Several

benefits accrue from this institution: it is the common bond threading the life of the village, while it provides a common grazing land for cattle, and also a recreation centre. Thus, it becomes the heart of communal life and the hub of social activities of rural people. A distinctive trait in village life, it is conspicuously absent in urban areas. While in villages of all types, the common is prominent, in the town there is no such place. We have in the above section discussed the more important characteristics of village organisation, though in the introductory paragraph to this section, we drew the reader's attention to other characteristics of rural living. It has been necessary, in the context of this analysis, to notice more important features though we may have to concede that village organisation is undergoing change and the rural characteristics are also not the same, as theoretically underlined. How the village has reacted to the forces set in motion by modern advances is the subject of the next section, for without this study the description and analysis of rural structure remains incomplete.

THE CHANGING VILLAGE

Modern village is under transition. There is the impact of the means of transport and communication and that of the modern system of franchise, which under a democratic set-up is extended to every adult. While the former has broken the self-sufficiency of the rural countryside, the latter has widened the horizon of the farmer and awakened consciousness in him. Similarly, the Press, too, has invaded the countryside and established contact with the outside world, so that he is now aware of the trends that are at work. The modern information agencies, the radio, the films and the like have also played their part in changing the face of the village. And above all the extension agencies have also played their part in changing the contents of village culture. In recent years, especially, the transition has been rapid, and the village structure has undergone change even in the backward countries, where under the impact of modern conditions, the village is breaking up as also its self-sufficient character. The nature of this change has been socio-economic. It has been a manifold revolution, though a silent one. In the sphere of economics, the transitional forces have been loosened from their moorings, and the age-old bonds faced with disintegration. The village community is no longer the same cemented relationship as it used to be. The spirit of individualism has invaded joint and group communities, while co-operative enterprises are taking root in peasant villages. The rise of towns has also affected the growth and structure of village communities, as we shall have occasion to notice in a paragraph below. The economic organisation has moulded itself accordingly, and is more dependent on the neighbouring economy than ever before. In short, the modern rural outlook is entirely different from that of older village communities. The ruralisation of industrial location, too, has

its impact on the widening horizons of the villagers, while it also opens out new employment opportunities for them. This has brought about a closer contact between the villages and the towns, between agriculture and industry, and above all between conservative and progressive forces. The recurrence of Wars has had its influence on awakening the national leadership to the need for the revitalisation of these communities, even in industrial countries, with the inevitable result that village life is undergoing a conscientious and planned change. All over the world is this change quite pronounced and marks national life in each country. In fact, it is rather difficult to categorise modern villages, according to the above classification, for their organisation is now of a mixed nature and not pure. More prominent aspects of this change in the village, it will be the object of this section to review, in the paragraphs below.

Disintegration of the Village. Both the rural community and its economy have suffered disintegration, with the process of change. In the social field, villagers are no longer so well-knit among themselves, as they were. The spirit of individualism has pervaded the countryside; even where group formation is being revived out of considerations for their own good and betterment, and not on traditional grounds of social living. In the East the bonds of caste have now been reduced to mere formalism while the feudalities in the West have also broken up. It is not only the rise of individualism, (the fuller impact of this we propose to study in a separate paragraph), but other kindred factors that have been responsible for this disintegration of rural communities. The disintegration of family that has been proceeding in the urban areas had its reflections in the rural areas: at least the joint family system broke up in the village and the individual families began living separately. The ever-widening educational opportunities afforded to rural areas, the teachings of the modern thinkers, and the influence of the modern competitive society, all had their impact on rural society. The centralisation of administration, with consequent weakening of village bodies and councils, and the establishment of modern law-courts with their elaborate apparatus for the dispensation of justice, also contributed to the weakening of the village community and its authority. Under the pressure of increasing population, villagers migrate both in search of employment and status, and this, in turn, enfeebles the village community to a very great extent. The educated villagers, being unable to find the same amenities of life to which they were used prefer to settle down in the urban neighbourhood. With the customary and religious practices, the villagers have not that old respect for the council of elders which had so far been in virtual authority over them. Travel and opportunity for extensive travel has served as an eye-opener to them. All these forces have militated against the authority and the way of the village council. Add to these the fact of the extinction

of barter economy from the rural countryside and a basis is provided for the superfluity of community's power and influence. While the economy is based on the system of barter, economic dependence of villagers is marked, but with the prevalence of the money economy, this need no longer be true, the individual need no longer depend on the goodwill of the villagers, the community being unable to bring its rebel members to submission by economic weapons.

Urban Influences Urban influences in the countryside have also been quite pronounced. With the development of the means of transport, the countryside has been drawn nearer to towns and cities. The extension of the communications, the post and telegraph and the radio and wireless, have all contributed to the encroachment of townish influences over to the rural areas. The law courts, too, have been seated in towns, this has also brought more intimate contact between rural and urban areas. The location of industry nearer rural sites has also influenced rural life to a great extent. The recent rural movements to which a reference was made in an earlier chapter, have also been, in no mean fashion, responsible for the extension of urban influences to villages. The recent trend of the urban people to spend retirement in villages has also been another contributory factor, in the same direction. The rural urban traffic, which has been both ways, has also had the same effect. Formerly, the farmers would go to towns in quest of marketing their produce, but now the migration to towns is more frequent and more common. The advancement of farm youth and his growing enterprising spirit have been witnessed in recent years with the resultant swing towards "urbanisation" of the countryside. The invasion of the screen to the countryside has also been of the same consequence. And the extension movement, launched by several enlightened governments, has also paved the way for the acceptance of nebulous ideas by ruralites. Thus various factors have been working towards the same end, urban influences have increasingly spread to villages. The result is revolutionary in its character. The villager is now no longer content with the same limited means of satisfying his wants, once very limited he has enlarged his consumption and begun depending on imported wares from urban markets. His cultural levels have also risen, thus incidentally extending his schedule of demand to several other commodities with which he had never been familiar so far. His agricultural activities have undergone a change he is now not content with subsistence farming, nor even with family farming but has commercialised his cropping system, of management and organisation, some of the farmers have introduced modern book keeping and accounting into their organisational set up. Traditional modes of cultivation and agriculture have been replaced by economic calculations, characteristic of urban people. Modern amenities of life, so far familiar to the urbanites only, have also found increasing usage in the villages. Thus the impact of the town and the townsmen has had far reaching consequences for villagers and rural economy.

Most of the mechanisation that is now a feature of farm practices is also due to enveloping and pervading influences of towns.

Individualism. The growth and spread of the philosophy of individualism has been a major event in human development. The individualist philosophy has swayed the mind of man and accustomed him to think in terms of his own personality and interests, to the exclusion of all others, though this may be regarded as the extreme form of this philosophy. That the common good is the resultant of the individual's own welfare, and that each individual is conscious of his good and is also planning for the same, is one of the planks of this philosophy and its main prop. With the popularisation of Mill's teachings, the spirit of individualism pervades the countryside even in the backward and the transitional economies. This has percolated to farmers, who have been very much influenced by this philosophy. All other factors, enumerated above have affected the farmer's mind and steered it in the same direction. In the face of this individualism, the joint structure of the village has crumbled down. Family farming became more and more common and peasant villages rose. It is only in the extreme stage of the individualistic philosophy that a halt was cried and co-operation began to be adopted in the rural sphere. Individualistic practice has not been very beneficial to the ruralites. It has no doubt made them conscious to the need for personal advancement and self-improvement and spurred them on to the attainment of the same with a recreated zest; but it has also made them vulnerable to the effects of a keen and relentless competitive social structure. On the one hand, the spread of individualistic spirit has pulled the villagers out of the morass of contentment and liberated them from the shackles of joint society, which did not give them even an elasticity of movement; it was also responsible for the further breaking up of the village social structure and the fragmentation and subdivision of their holdings, often resulting in uneconomic farming. In the social set-up, the disintegration of the village society has often been attended with grave consequences, like the spread and prevalence of litigation and the exploitation of the individual farmer by the indiscriminate money-lender or the landlord, usually reducing him to the status of a mere serf. Consequently, rural relations have much deteriorated and the compact village structure exposed to danger from the outside. The bigger fish have been swallowing up the smaller ones often leading to their economic and social extinction. Thus the baneful aspects of the individualistic philosophy and practice have more than outweighed the beneficial ones, like those of providing an impetus to their incentives. Without individualism, the village community was so strong and well-knit that it was powerful enough to stand against political tyranny, social exploitation, and economic disintegration, and afford protection to the weak.

Economic Dependence. From independence to dependence is a far cry, but that is the change wrought in the village economy by the inter-

play of the modern economic and social forces. At one stage, the village was self sufficient and independent in respect of the satisfaction of its major wants and the provision of major necessities of life. Dependence assumes several facets, it is closely tied to the rest of the economy, and inescapably interrelated to world forces. The former fact was noticed in the first chapter of this book and the latter discussed in the chapter captioned, "Agriculture in the World Economy". But the fact that farm income is dependent on non farm income to a very great extent remains to be noticed with the increased trend towards the commercialisation of agriculture. The income of the farmer does to a very great extent depend on revenues received from the *outsidenon rural sources*. In still another manner is the farmer dependent on the external world he has to look to the outside sources for the provision of the implements of farming, most of the farming operations have been mechanised in the West. Formerly the village blacksmith and the village carpenter were suppliers and technicians in respect of these implements, but now it is not they who could supply or repair the big and complicated machines that has to be undertaken by trained engineers. And with the perfection and extension of rural services, the farmer's shell is now being broken and the outside dependence increased. It should not be taken to mean that outside dependence is in any way undesirable or bad, but the point that needs to be appreciated is that there has been a switch over from an independent economy to a dependent one. Assessing the results of the same, we understand the implications of this very dependence as it works itself out in the village - this fact has to a very great extent been responsible for the increasing progress in the village, agriculture has been modernised and the commercialisation of agriculture has also proceeded apace. Farmer's purchasing power has also increased and he has also begun to enjoy amenities of life, denied to him so far. He has been brought in greater and more intimate contact with the outside world, and thus alone has been responsible, as we shall presently see, for widening his horizons of outlook. But on the other hand, this increased and increasing dependence has broken the compactness of the rural community. The farmer is now a prey to the forces beyond his control, the forces of demand and supply operating relentlessly from the outside world. Thus he is only one cog in the bigger economic mechanism, while in the village he was an important supplier of food, feed and fodder to the villagers and their cattle. The problem of marketing has risen for him in a way never before faced by him. he has now stepped into the competitive arena. Thus his dependence has been a mixed blessing for him.

Widening Horizons. All the above forces and factors have been moulding the farmer's outlook in ways more than one. The farmer is now no longer the same old superstitious person living in his shell and seldom interested in the outside world and its movements. He is now in touch with outside forces and is influenced by them. He is interested in the social and economic fashions that operate on a wider canvas,

and is an active participant in the political movements that sweep the country. The peasant, in the backward countries, is now actively taking part in several movements that are being launched by governments or politicians. A dormant mass has now come to life and is seething with activity. These factors have had, in addition, an educative influence, both on the peasant and the community. The sphere of activity of the farmer and the village community has been widened out of all proportion to their previous horizons, with the inevitable result that the peasant is now wider awake and understands, or at least tries to grasp, the essentials of forces operating around him : he is no longer a passive partner. This is a remarkable change, for a change of outlook means a change in the way of living, even though at long last. This thing betokens the transition through which the rural community is passing these days. Characteristic of this change of attitude, is the adoption of the modern scientific methods of farming by even conservative peasant communities; modern tractors have penetrated to ancient communities like Indian and Chinese peasants. Even these fatalistic communities have now awakened to the need for improving their methods of farming and raising their standards of living; and conscientious efforts are being made towards that end by the governments in co-operation with their people. The Extension Services, too, have played their part, as outlined above. The recent movements towards the popularisation of social education in the rural countryside has, verily, been a factor of some importance in changing the countrymen and their outlook. The dispersal and ruralisation of industry, now a fashionable trend in the sphere of investment, has been potent in giving a new outlook to villagers, who come in direct contact with machines and are sometimes their operators, imbibing the traits incidental to industrial communities. Thus the peasant is in the melting pot, undergoing a change of heart. This has been for the better, for education in all its aspects is always a blessing and seldom a curse; the wider outlook of the peasant has also initiated all this modernisation in his sphere; the more calculating one is now endeavouring to get the best out of his business and combining it with some sort of small scale and cottage work that he could undertake. And above all, wide-awake as he is, he refuses to be a mere pawn in the political movements : he is now an active participant in them.

Modern Rural Outlook. Living as we do in stirring times, the modern age is termed as the age of revolution; this is especially true of the sphere of agriculture which has recorded more changes than any other industry. In the light of the above analysis, it is abundantly clear that the modern rural outlook is very much different from what it was only a generation back. Recurrent wars, fought within a single generation, have very considerably influenced the countryside and its people. The peaceful life of the villagers is being disturbed by hectic forces of modern living. While primitive living was almost wholly agricultural, modern living is not so : agriculture, industry and

trade are equal participants in modern economy. In the primitive period, it was hand culture that prevailed and dominated agriculture. But now things are entirely different. Specialisation has become an established fact in the countryside. Modern rural outlook is different and is modernised. It is also to be recognised that all agriculturists are not at the same stage of development, the mores of living are different from place to place. But the fact remains, as pointed out above, that the sphere of agriculture has been considerably influenced by the transition that has taken place in the world at large. It is only through the full utilisation of both the agricultural and the industrial resources that the levels of living in any particular region can be raised. Conscious of this fact, enlightened states have undertaken huge and extensive programmes of all round development, which in turn, have moulded agriculture. Rural consciousness has also been roused to the highest pitch, with the consequence that the people are not now resistant to new ideas. In this context, we have to recognise the fact that modern rural outlook has been a potent factor in moulding the life of the nation and in raising its standards of living. *The routine of life in the countryside is broken and punctuated by greater joy in living and happiness derived from the use of human faculties in creative pursuits.* The security of life and the permanency of tenure have also been contributory factors. Protective legislation, enacted for the benefit of weaker sections of rural masses, has been instrumental in making them contribute their fullest towards the realisation of the ends set before them in enlisting their co-operation in the task of rebuilding national life, and national economy on sound lines and durable bases. The modern rural outlook, in brief, is not exclusive, nor conservative, nor suspicious of external forces, liberated as a result of the recent trend to over all planning. Admittedly therefore, it is more progressive, healthier, more co-operative than its older counterpart.

SUMMARY

The scope of this chapter has been fairly wide. We have covered various topics: rural structure, village types, rural characteristics and the changing village. A correlation between the village types and the farming systems was established. Under 'rural structure', was studied the place of agricultural organisation in rural life, and the impact of the same. The structure of the village community, as distinguished from that of the urban was analysed. Various factors that influenced the growth and evolution of the village were also noted. The bearing that agriculture has on rural living in the light of its significance for village economy was found to be of importance. The impact of farm organisation on the rural set up was also underlined. Emphasis was then shifted to a description of the village types. A number of these were surveyed: scattered hamlets, (corresponding to the scattered farms), farming

villages (embracing a large number of farming varieties such as individual and joint farming), rural settlements (arising out of settlers' efforts) (of both the homogeneous and the isolated types,) joint communities parallel to the joint cultivation), group systems (the co-operative and the collective ones) and proprietary types (formed by the growth of the landlord villages). We had also occasion to notice their chief characteristics and the incidental advantages and disadvantages arising out of these. The inference was that the village communities and the process of village formation was the product of historical and evolutionary forces and that it is difficult to categorise different villages according to the types mentioned above. In our effort to establish the correlation between village structure and farming organisation, we analysed the impact of the former on the latter, and traced the working of the same as well. The organisational correlation was found not to be very close ; it was rather loose: the village structure being more elastic than the farm organisation. In respect of the farming effects, we noticed that certain villages came into being as a result of the farm structure prevailing there, while other villages had already come into being due to the operation of certain sociological causes ; and farming shaped itself out subsequently. The effect of land tenures on the organisation of the village, especially through the sphere of the agricultural relations was underlined; the course of village living is to a very great extent determined by the way in which land tenures have been evolved and working. Again, the difficulty of establishing a direct correlation between land tenures and village organisation was well-nigh impossible, because of their complexity and mixed working. In this section, were also noticed miscellaneous factors, *e.g.* sociological, political, social, evolutionary and economic ; and these were analysed in their bearing on village types. It was considered pertinent to survey rural characteristics and find out what their significance was in relation to the inquiry falling under the purview of Agricultural Economics. The distinctive features of the rural society were noted at length; the introductory paragraph grouping the major rural characteristics ; this was followed by an exposition of the more important ones. The characteristic features of rural life : self-sufficiency, integration (vertical and horizontal) and village common, were dealt with separately and at length; we noted the significant aspects of each and were struck with the remarkable linkage of all these factors and features. The next section devoted itself to the various aspects of the changing village, or the village in transition. There is now a closer contact between urban and rural areas, with some revolutionary implications for the countryside. The village has suffered disintegration, while urban influences have percolated even to the lowermost strata of rural population with the result that the traditional modes of living are yielding to the more fashionable ones. Individualism has spread at an amazing pace, but strangely enough, economic dependence has also increased as between the village and the outside world. Not that both these forces have been

contradictory, but that the operation has been in opposite directions individualism has been responsible for various incentives now operative in the countryside as also for the umpteen evils that have fouled the village, while economic interdependence has been responsible for the dependence of the villager on external factors for his income and living. It was also observed that rural horizons and outlook have been broadened out of all recognition, especially in the backward and the transitional economies. Modern rural outlook, it was stressed, is very progressive and least conservative and quite ripe for the implementation of plans of economic development that may be broadbased on rural folk, who have a very important role to play in the world of today.

CONCLUSIONS

Conclusion In the light of this analysis, we reach certain conclusions on village organisation. Village structure has no doubt a bearing on farming systems, but is not derived from it, except in certain cases. Village organisation is more plastic than farming systems, and a correspondence between the two is not very close nor intimate. The correlation between the two (and this is the most important contribution of the chapter to the analysis) is rather remote and indirect. In fact different factors have been operating in the two spheres: farming systems owe their origin to natural and social considerations, while the village organisation is the product of multiple forces acting and reacting on each other: these forces may be evolutionary, sociological, cultural, historical or economic. While we try to underline various rural characteristics, we should concede that it is not possible to generalise on this subject because of the manifold changes that are in operation in the village. The conclusion in this point seems to be that village characteristics are more or less distinct from those of urban life, probably because of the nearness to Nature and the hazards of the farming profession. The socio-economic life of the villagers is the product of the complex farming chores. With the disintegration of the village community, the whole thing seems to be under transit on and rural life in a plastic mould. But one thing is certain: the march of this progress cannot be stopped, its trends are quite well defined. It is not possible to reverse the tide of progress nor desirable to do so; we could at best canalise the clear cut trends into some useful channels of activity and evolution. Modern rural outlook needs to be recognised and given its due place in the democratic set up, in fact the increasing role of the villagers could hardly be overemphasised or exaggerated. Rural structure has grown more dynamic now than ever before.

Rural Dynamism One word before we close this chapter. Rural dynamism has become an established fact in the modern world and it is not possible to ignore it. The structure of the village is experiencing a change, while the outlook of the rural people is also registering a

new pattern. Variations there are as between regions and regions and people and people, but the fact remains pronounced that the village economy is under transition. The villagers have reserves of energy that could find healthy outlets if canalised into suitable channels. The farming jobs are not usually taken to be wholtime occupations, they are treated as part-time and seasonal pursuits, with the result that the farmer and the villager could more conveniently contribute to the uplift of the nation than the industrial sector could. Gone are the days when dependence could not be placed on the peasant farmers, for they lacked initiative and enthusiasm or were unappreciative of the significance of the national economy for the village; we are now living in different times, the farmers now appreciate the importance of national plans in their bearing on their own living. *Rural dynamism* has, therefore, assumed a newer meaning and significance, both from the theoretical and the practical points of view. What is the trend of this dynamism in a particular society, what is the role that this movement is going to play in the spheres of agriculture and industry and the national economy in general; and what good could be secured out of this dynamic evolution of the village communities, all these questions need be answered before villagers could be expected to co-operate in the task of rebuilding the nation; these questions we discussed in this chapter.

FARM MANAGEMENT

The Management Function—Definition and Explanation Questions and Problems. Other Issues Functional Integration and Prospectiveness Farm Management—Ends of Farming Human Objectives The Time Factor Group and the Individual Agriculture and Society Management of Farms—One-Crop-Farms Specialised Livestock Farms Diversified Crops Farms Feed and Livestock Farms Crop and Livestock Farms Family Farms. Specialised Farms—Preferences Speciality Crops Irrigation Farming Horticulture and Vegetables Dairy and Poultry Farming Cattle and Sheep Farming Farm Woodlands The Inference Success in Farming—Measures of Success Factors of Success Efficiency and Capacity Scientific Management in Agriculture Planning the Farm Records, Survey and Accounts. Summary and Conclusions—Critique of Farm Management

After an examination of the various aspects of the problem of village organisation, we undertake the study of the problems of Farm Management. The problems attendant upon this particular subject are of great significance from the point of view of Agricultural Economics. It is proposed to study this subject rather thoroughly unless we understand how the individual farmer tackles his problems, it may well nigh be difficult to appreciate the issue, as the subject of Agricultural Economics unfolds itself. We propose to cover a large field ranging from the simple definition of the term "Farm Management" to the critique of it, in the light of the management of various farms (from the view point of cropping) and the specialised aspects of it, and the weighing of the measure of success in farming. It is in this context that we follow the various problems in farm management. It is not, however, claimed that the intention is to exhaust the whole subject of farm management, that would be quite impossible to do within the purview of one single chapter, but the more important portions of the same would still be noticed. The study of Farm Management is from the point of view of the study of Agricultural Economics and that is why only some select portions of the subject would receive our attention. With this apology we intend to survey the problems facing the individual farmer seeking to manage his farm as a single enterprise. We have to probe into the problem from the angle of the individual farmer, and not from the national angle, though the national view point would not be lost sight of. It is, however, assumed that the individual does not take up a line of action that may be injurious to national economy. Pointed attention need be drawn to the question of success in farming, on which the productivity of the agricultural system in a certain country depends.

THE MANAGEMENT FUNCTION

Ordinarily speaking, by the "management function" is implied the function of the entrepreneur in managing his production unit. The

management function has come to occupy an important place in the economic set-up. The function of the manager is not to be underrated, for it is he who bears the responsibilities of running the "plant", maintaining efficiency at a very high level and also raising output, within the limitations of his resources. With the development of capitalism the management function has become important, in fact increasingly important, too. Another factor that must be considered is the one of divorce between investment and management: the investor has become an absentee with the result that management has to be entrusted to one expert in the line. This has resulted in the specialisation of the management functions, and a study of the same from the angle of the expert. This may not be true of agricultural operations, where the unit of activity is small-scale and where the entrepreneur (the farmer) is the manager. Still, in the sphere of estate farming, the manager is often not the owner-investor. Hence the modern concepts of management could be applied to the sphere of agriculture, though the applicability has to be carefully weighed in the proper perspective. In the sphere of farm management, special attention must be paid to various types of farms and the special problems they raise. The ends of farming would, therefore, be studied in order to settle the priorities in the management functions. A descriptive study of the farming systems would follow in order that we may be able to assess the different special management problems. We shall also notice the factors which may determine success in the farming business, and in the light of these, gauge the essentials of management issues. Other factors that may also influence the management policies of individual farmers are the broader facets of state policies in the sphere of agriculture and the targets of planning and its methods with special reference to Agriculture. We must also notice the outlook of the farming community and the resources (physical and human) in a certain country. And the institutional factors and forces that are operative in the country must be noticed, as influencing the management technique of the farmers. But all these facts are rather peculiar to a country and could not be generalised about; they have to be taken into account when the individual farmer carves out his management policies and decides upon the priorities that he must follow. We shall, therefore, not take account of these factors, as they vary from country to country and could not be the basis of a theoretical dissertation like this. Before we delve deeper into the issues of farm management, we shall circumscribe the scope of the subject of farm management, for that would help us in visualising things better.

Definition and Explanation. The function of farm management covers the jobs of organising the farm, planning it, directing its operation day to day. Organising a farm business may not be something which from is done once for all: it has to be repeated over and over again; for at the beginning of each new planting and breeding season, a start may have to be made. Also an unusually heavy or low demand

may call for reorganisation even within the same season or the same year. True that small farms may not be able to afford managers, but the fact remains that the management functions have to be discharged by somebody. For example, in the case of family farms, it is the head of the family who has to discharge these specialised functions. While in the case of joint cultivation, it is the village community which has to chalk out a programme of action. And even these family farms may raise special problems of management and organisation. Some family farms may be big, others small, and still others medium sized and they may all raise a host of problems, too. Farm management is commonly understood to include organisation, operation, buying and selling and financing of agriculture. We shall have occasion in the next paragraph to list various questions that may be raised in this context, but it must be taken to cover a large ground. While *organisation* means that the right person is put in the right job, the right sort of planning undertaken, and the right selection made of lands and crops that may be cultivated in a certain field, *operation* is taken to refer to day to day planning and direction of the farm activities. But these could not be kept apart from each other, for they ultimately merge when the question of reorganisation arises. The terms 'buying and selling' cover marketing activities, as also those relating to the valuation of farm estates. A very troublesome problem arises when the farmer grows certain produce not for merely subsistence but for the purposes of disposal in the market. And the valuation of farm property has immediate relevance to the question of both costs and credit, for farm lands may provide a security to the lender for the purpose of finance extended to the peasant. Financing is a big problem in view of the meagre resources of the peasant and his low saving powers. The other questions that may be treated as corollaries from the same relate to efficiency and capacity of the individual farmer. Farm management must, therefore, concern itself with the wide range of complicated issues in the sphere of farming. The larger questions of selecting a farm or of raising farm buildings or the purchase of livestock or of getting suitable equipment are all issues which, however, could not be relegated to the background.

Questions and Problems Various questions face the farm manager (this term is broadly interpreted) whether he is the cultivator himself or has to manage the farm on somebody else's behalf. The farm manager is faced with a host of problems: what to produce (which varieties of crops and what breeds of livestock) on the farm as a whole and on each field; types of equipment, (the fertilisers and machinery) how much of each to use, the practices to be adopted on the farm and finally, the unit of cultivation for the purposes of farming. All these problems and questions face conscientious farmer manager. The answer to the question, 'what to produce' is emphatic and clear cut. He would have to decide what crops, what livestock, or what combination of crops and livestock or both, may be selected on the farm. The farmer answers these questions when he buys or hires farm which

could produce only one crop or only one type of agricultural operation. But most farms taken to be one crop or single-product farms are in fact not really so : most farming is diversified capable of growing several and many crops, whether in rotation or simultaneously. He has to choose between the different varieties of crops and the different breeds of livestock too. Distinctive choice must be made between different types of farm produce. He would next consider what to grow on each field, *i.e.* what use to make of several fields or kinds of land in the farm. This decision may involve a choice about the rotation system. The question of selection of equipment, fertilisers and machinery, involves an understanding of the broader issues of the type of the farm (whether the farm is on a large scale or a small scale) and the suitability of the equipment to the farm, as also the financial resources of the farmer. The question of mechanisation of agriculture has assumed great importance and social significance, but in the sphere of agricultural economics, social issues may not merit that attention that they may assume in the sector of industries. The problem of farm practices is also a fairly wide one exhibiting a wide variety of practices in preparing the seed bed, the care of the crops and the management of the livestock. This covers a horde of problems, like those of terracing *versus* strip-farming, *versus* contour-cultivation; and liming the soil, and pasture management. Different practices arise out of the divers types of land and the differences from field to field on the same farm. The issue of the unit of cultivation to be selected is another headache for the peasant: he must reckon with the problems of large-scale *versus* the small-scale, and the high producing crops: cattle *versus* the low yield ones and investments *versus* returns. All these questions need thorough study on the part of the manager farmer.

Other Issues. Above have been listed some more important and common questions that require to be tackled by the farm manager. Most of the above questions relate to the organisational aspects of farming. But the questions of operation are not to be slightly treated. A typical question on the operational side is that of selection of harvesting time, the most propitious time when he should apply the sickle, and the day-to-day succession of problems and decisions. The planning of work must also be decided upon. The efficiency of the farm manager lies in his ability to get all the work done in time and keep to the weather schedule. Planning ahead of the time, and sticking to it is the most important part of operational success. Not only that farm operations be planned weeks ahead of the time, but also that the equipment and machinery and supplies be kept ready for use so that these be handy when required. Nothing should be rigid; this schedule may have to be revised from time to time as conditions of farming operations change; each morning the work may be planned for the day. In fact organisation and operation are overlapping and intertwined. Unpredictable weather changes, or insect ravages may call for sudden changes in farm programmes. In short, the operational

business is as important as that of organisation. But even when good organisation and good operations are given, the farmer may be not able to keep even, simply because he is not a good businessman. The questions of buying and selling are also quite important from the management point of view. He may be paying too much for what may only fetch him a low return. He may not be able to handle the commercial aspects of his business since good organisation and management are as important to the farming business as buying and selling. This requires correct anticipation of demand for farm produce and also to bring the farm produce to the market right in time, and at the lowest costs. Good judgment is, therefore, essential for buying and selling. Farmers are often not good bargainers for they do not follow market trends closely. Co-operative farming has been taken up, so that a specialist may be employed to tackle the marketing chores. Still, a mistake may be committed when farmers go out to buy a farm. The purchase may be affected in an area where the business of farming is on the decline. Again some farms may be bought for more than their worth. The fact is that the land market is poorly organised and the farmer is much too poorly equipped to understand the technique and working of the same. There are no acknowledged grades of lands, and if there be, the farmer is not aware of them. It is only personal judgment that must be relied upon. Land prices are a function of management. We propose to study the wider problems of marketing and land evolution in a separate chapter. In this chapter, however, it is not possible to draw more than casual attention to this aspect of the problem in a general fashion. Next come the question of finance in respect of wider issues of farm management. While the ordinary family farm does not require a large capital investment, questions of its financing are no less difficult, (in proportion to the size and the consequences of the mistakes,) no less serious and grave. Large commercial firms employ expert financiers to solve their financial problems, but the ordinary farmer could not afford to do so, nor could it be expected of him that he may be an expert himself. In fact, most farmers are in debt, while very few of them have resources large enough to be able to finance their own farms. Borrowings characterise their business all through the farming: they borrow *firstly* to buy their farms, *secondly* to clear it, make it fit for cultivation and erect or enlarge the buildings, *thirdly* to buy the needed equipment and livestock, *fourthly* to spend on the growing of the crops, and *fifthly* to invest on a host of other related and allied purposes. This list may not be exhaustive but it indicates the scope of farm credit and the ways on which the borrowed monies may be spent. Some farmers borrow too often, while others may err in the other direction. An enterprising farmer, on the other hand, is to make decision with regard to financing the farm business in the right time and for the right amount required for this business. He must know when to borrow and what sums to borrow and where from to borrow so that he could increase the income

of his business. All opportunities and avenues need to be analysed and weighed as to the investment involved, its yield and uncertainties, etc.

Functional Integration. Next we discuss integration of all the functions of management, *i.e.* organisation, operation, marketing and financing fitted into one another. All these separate aspects of the management function should be no longer considered separately and in isolation from each other. All these functions must be fused and fused well in order to obtain the maximum results from the same. Their proper compounding alone will impart cohesion and permanence to farm business. The problems are manifold and need to be tackled as a whole. How the crops must be placed in the system of rotation, and how the various operations of cropping must be fitted together, are not problems in agronomy or husbandry but also in farm management. The problem of integration thus assumes a newer importance, it is that of fitting together of all these into one business unit in such a manner as to utilize all farm resources most effectively to maximise output, incurring least costs. This total task is more than a mere adding up of the individual tasks. Most of these have to be undertaken nearly simultaneously. Production and financing operations must be integrated if net returns are sought to be maximised, so also must the farm services be integrated in order to reach high levels in production. Also financing and marketing need to be integrated in order to market the produce at the right time. The operational aspects must also be combined with the organisational ones; this has already been established above. Opportunities for completer integration have been multiplied by the growing use of power units of an increasingly flexible type; the all-purposes tractor does make for such flexibility, as also the electric motors. Most farm equipment is clearly and readily moveable. Even the immoveable and heavier equipments are being made of lightweight materials, this makes it easier to use farm space to a wide range of uses. Farm business is highly complex. Unless integrated, it would present a state of confusion and chaos both to the farmer and the analyst. Hence, too, integration is indicated. We have already adverted to vertical and horizontal integration that is practised on the various types of farms in our study of the farming systems, in an earlier chapter. It may be useful to bear those things in mind when talking of integration.

Into the business of farming are introduced jobs relating to supervision and direction of farming chores. This particular matter involves an understanding of the management, labour relations and the problems arising out of the same. Management problems, related to the work of integration, are of an identical nature both on the large and the small farms, except that the amount of supervisory and direction work is heavier on the former than on the latter. There is, however, some difference in regard to the problems of integration on the *rented* and the *self-cultivated* farms; while on the former ones the work of management and, therefore, of integration lies outside the purview of the individual farmer, on the latter it is individual farmer (the peasant

cultivator) who is to tackle the problems of all types of integration. Integration of the management functions also varies with the type of tenancy in vogue, on *share* tenancy the cultivator must also share the main jobs of integration, while on pure tenancy system this work is no longer within the orbit of the cultivator. In short, integration is neither a specialised nor an expert job, though it involves an understanding of the basic evaluation of various aspects of farm management issues, also the proper fitting in of the various issues and the proper timing of the same. Though the basic management decisions are of the same nature throughout the sphere of farming, different farms raise different problems of integration it is in the tackling of these problems that farmers could ensure their success. Integration of the managerial functions is of supreme importance.

And Prospectiveness There is an element of prospectiveness in managing the farm. The farm manager is not content with his present state but he also looks ahead of times. This is with a twofold purpose, firstly that he may be able to plan for the future and secondly that he may not exhaust his reserve and supplies in the present or the immediate future. Most of the managerial decisions cover a certain time span of a crop-season or a year but some decisions (like those of making permanent improvements or buying a new piece of land) may involve investments in equipment, machinery and buildings for a generation. It is in the light of the present circumstances and the past experiences that the manager would like to make decisions that affect the course of agriculture in future. The only thing that needs be done is the amount of caution that must go in the applicability of his past decisions and experiences as a guide for the future. Still, in view of the fact that farming is undergoing rapid changes especially nowadays the prospective view of the farmer must limit itself to the foreseeable future and not to a remote time span. Forecasting in the sphere of farming is no easy job and we shall have occasion to note the difficulties involved in this. But the point is that the element of prospectiveness is prominent in the farming business though the farmer may not start crop forecasting himself, but take account of the estimates and forecast prepared by other specialised agencies, he could very much improve the state of agriculture. In this context, it may be pertinent to notice what the scope of prospectiveness is. Prices and costs be anticipated at least in the broader trends, changes in the field of technology, the possibility of newer innovations and machines, the evolution of new types of breeds and varieties, new methods of pest control and finally, even the new methods of management. That may be a very large canvas for the farmer to work on, but theoretically speaking, he must take stock of the situation in this manner. Since he is not operating in a static world, he must improve his farm and have a dynamic outlook on the various aspects of the management problem. Without being able to keep in the current of change, things may move faster and leave

him behind the times, out of date and eventually out of place. It is always by a process of trial and error that the farm manager is able to arrive at a true and correct perspective of the situation. Perfection is unattainable but some less imperfect approach could certainly be evolved. In short, farm management owes to the dynamic forces of civilizations, and is itself dynamic.

FARM MANAGEMENT

This subject is, therefore, of very wide application and large in its contents and big in its scope. Farm management is based on the premises of the science of Agriculture and of Economics and in so far as both these have scientific basis, the study of farm Management is also scientific. It consists of the application of scientific laws and principles to the conduct of farm activities. This science is more particular in the application of the laws of science, and in the light of the generalisations enunciated above, the farm manager tackles each situation as it arises. It is the application of the refined and narrower principles of Agricultural Economics to the management of the farms. Hence its principles must be consistent with those enunciated by the Sciences of Agricultural Economics and Economics and Agriculture (which are the sciences, basic to the study of the science of Agricultural Economics.) It is an applied science. Where the conclusions, arising out of this study conflict with the laws of either Agriculture or Economics, its conclusions must undergo a restatement or discrepancy detected. It must always be borne in mind that this separate study of the subject of Farm Management is to be derived from the study of Agricultural Economics, of Economics and of Agricultural Sciences. But the applications of the conclusions of this study must be made in the light of the study of several independent subjects, like that of Organisation, Management and even Accounting. As we shall have occasion to notice in the body of this chapter, Farm Management concerns itself with the applications of the methods of book-keeping and accounting and even record-keeping, on the one hand, and that of subjects allied to agricultural sciences, on the other. A specialized study of Farm Management involves a refresher's course in the physical and the social sciences, for it has both aspects, the physical and the social. It is not the application of these principles in isolation, but in several combinations, as many as possible. The conscientious farm manager must, therefore, be cognizant of the various trends that are in progress in farming but also in economic and social life. One word more and we have done. The study intended to be covered in this chapter does not pretend to be of the same detailed nature, as the specialised study of the science of Farm Management might warrant but is only derived from the general study of the Science of Agricultural Economics and in so far as the same is relevant to the study in hand. Economics, Agriculture and Agricultural Economics, and their subordinate and subsidiary subject, Farm Management must integrate consi-

derations of Economics. The decisions, to be deduced in the course of implementing the conclusions of Farm Management, must be tested on the anvil of economic analysis, before considered correct.

Ends of Farming Before we undertake the descriptive and analytical survey of the problems of farm management, we visualise the ends of farming, the aims and objectives and the guiding forces which the farmer places before himself when he sets to manage his farms. The ultimate goal before him could be as well termed as one single and ever all target that he must place before himself—maximisation of the net income of the farm. This term, 'net income', needs be defined in very precise terms, if only to visualise the ends in very clear and precise terms. Net income may arise out of the impact of land on the farmers and *vice versa*. The relationship between land and net income is very intimate and must be carefully weighed before we could understand the meaning of the term. Net income would be useless if realised at the expense of the fertility or the productivity of the land as the future use of land would only yield a very negligible amount. Hence net income has a prospective significance. Secondly, net income must always be considered in respect of a certain time span, say a year or a month or a week. If not taken in this context, the term would lose all significance for the purpose of analysis. Time span could not be the life span that would be useless from the purposes of a standardised estimate. And net income must be viewed from the individual and the group points of view and not from one viewpoint alone. Individual actions influence group actions and the group actions influence individual actions. Farm incomes could change for the worse or for the better if the course of action, which is adopted by individual farmers, is such as to benefit them or to hit them, even individually. Fourthly, the net income of farmers, or even the group as a whole, could be reduced (and considerably, too) by producing a quantity much larger than would be disposed at remunerative prices: this is so because of the fact that farm produce will not stay long: it is highly perishable. And unremunerative prices would hit farmers and in the long run also the interests of the community. And lastly the consideration paramount in the calculation of the net income of the farm is the well being of the family for whom the farmer undertakes all his business. Without this objective being achieved, the farmer would be a poor wretched farmer, and the standards of agriculture could never be maintained, in fact they would seriously languish. Maximisation of farm income is not to be taken in pecuniary terms alone, but in the broader ones of communal and above all family welfare. Proper land usage is also with respect to the above mentioned well being. And the increase of land incomes is also with reference to common welfare. The one motive of farming is to maximise farm incomes.

Human Objectives. Talking of human objectives, first, we note that they are important both from the individual and the communal points of view. Farming and for that reason, all economic activities, are undertaken with the sole objective of increasing welfare. Maximising human satisfaction involves so many considerations of Economics and Sociology. It is to be admitted that there is no limit to which human welfare may be secured or human standards raised. In the first principle, there is the question of sacrifices undergone by the present generation for the betterment of the next. This generation, may, by denying itself the amenities of life, and investing their savings wisely, promise the next one much better opportunities for their own betterment in terms of good equipment and amenities. It could also adopt a course of action designed to the wastage of present resources much to the detriment of the progeny. This prospective view is relevant to the future of agricultural development over generations and the pattern of such development. But all these actions are contributory to human interests and values of a larger type and not the narrower selfish interests. Just as the agriculturist may be concerned with the conservation of his material resources, he should also be concerned about the conservation of human resources which are to play a more endurable part in national economy. Agriculture could be wielded to these ends. Looked at from this angle, the ends of farming are not accepted only in the material sense but for building up the nation. Without labouring this point further, various human objectives may be now enumerated. The more important ends, which contribute to better living on the farms, are very much built out of concrete things : food, housing, sanitation, education and above all social security. Food and nutrition is the first and the most elementary end in all types of farming, whether it be the subsistence one or the collective type. Even cash incomes are devoted to the purchase of good food, but most farms raise their own foodstuffs. With the development of storage facilities, the qualitative aspect of food and the elasticity of its supplies, have improved more than ever before. Better nutritive quality of foodstuffs is the foremost goal of the farmer. Their housing standards, all the world over, are rather low, and need to be much raised. Housing is an important determinant of the health of farming communities. Sanitation, which in the rural areas, is very poor is another very important determinant of farm business for poor sanitation may impoverish the farmers. Consequently many man-days are lost by them. While in the matter of dwellings, only an individual family is primarily concerned, in the matter of sanitation, it is the community that is affected. But it must be conceded that both these factors are of great importance. Farming provided a suitable and correct provision in respect of food and shelter. Health standards of the farming community are much influenced by the ends and standards of farming. In fact, the farmer's immediate concern is with the welfare of his family

and dependants and any ends that clash with the same are not accepted by him, they are rejected. Farm dwellings may be improved when this is publicly undertaken by the state or some other similar authority. So far attention has been rivetted to the improvement of urban dwellings, but it is desirable that farm families should also share in these beneficent activities. The next human ends in farming, broadly speaking, are those of improved sanitation and medical aid, these are significant from the viewpoint of national regeneration, for if the farmers be unhealthy or living under bad sanitation they would not be able to carry out their outdoor duties in an efficient manner. In fact, farm people have a better chance to live in a better state of health than the urban workers. Being much less exposed to communicable and infectious diseases, they may, however, succumb to these onslaughts, if their environments are not kept clean and healthy. Sanitation has, therefore, a significant role to play in the farming ends. In a place notorious for bad sanitation, the farming business would most certainly languish. Although, theoretically speaking, farm people have a better chance to be healthier, we find that they are normally not. And this point cannot be overemphasized in view of the fact that levels of efficiency and living and of health are very much interlinked together. All these are inter-related. Next consider the objective, Education. This is of a twofold character - one which gives the farm children a general preparation for the varied types of occupations in the ordinary course of living, *i.e.* the preparation for life (general education) and the other which trains them up to be efficient farmers (specialised or technical education). Commonly farm boys do neglect the former type of education, *i.e.* the general education, while demands put upon them by the technical character of modern agriculture are not met with by the training they get on the farm, during their boyhood. Hence the need for both compulsory general education and for technical education to be imparted to farm children. Education is an investment from the individual and the social point of view. The last human objective, that of social security, is the most important in the realm of farming, which is exposed to great personal hazards as distinguished from business risks. In fact both these types of risks are so intermingled that the farmer could not dodge either. Personal hazards are covered by life insurance. The fact is that even in the advanced farming communities farmers are slow to buy the various types of insurance probably because of their traditional dependence on farm property, and due to the uncertainty of their incomes. This attitude may be in part due to ignorance about the advantages of insurance. Various types of overall legislation have been enacted by various enlightened governments to help farmers get better security. Regrettable it is that while so many divers schemes of social security have been launched for the benefit of urban workers, such schemes have not been popularised in rural areas. In short, the

human objectives of farming, as outlined above, are not being fully and completely realised; in this sphere their importance could hardly be overemphasized. And it is human objectives, without the realisation of which the business of farming would never inspire that interest and enthusiasm among farmers which could ensure the main end, that of maximisation of their incomes.

The Time Factor. In a discussion of ends and objectives of farming, the factor of time must needs be restressed. It was Dr. Marshall, who was responsible for the proper evaluation of the time factor in the sphere of Economic Analysis. It may not be in the same identical manner that we assess the importance of time factor in realm of agriculture. The problem of time-span in agriculture merits consideration from the point of view of farm business and from that of the farmer. This means that there are two view-points: the business and the personal. Taking the business aspect first, we are struck with the fact that the farmer has to balance receipts and expenses (from various angles) over a period of time (say a year) in order to determine which alternative is the best. But if the time-span is longer, calculations are accordingly spread over the same. This generalisation holds true with some variations in different types of cultivations, as we shall have to notice in the present chapter when we deal with individual farming. From the purely business angle farm accounts must take stock of the depreciations and the exploitation of lands. In the case of family farms, for instance, yearly calculations are the rule, though the time-span may assume a much longer period, say a generation, prospectively speaking even a longer period. This is no doubt, quite sound from the purely theoretical aspect but this is not so practical for the simple reason that calculations spread over generations are too unwieldy and because the period covered by the lifetime of one farmer could never be the same (counted in terms of years) as that of another farmer. Of course if the view is that each generation should leave to the next a better farm than it received, the prospective angle must receive consideration, but this is too distant an ideal to be translated into actual practice and conceded by the individual farmer; hence this point of view need not be given prominence in the study of farm management. The business point of view is, therefore, very intimately related to the time factor and must be appreciated. From his personal angle, we find the human aspect must also relate itself to the time-span. This is to be recognised for the simple reason that even the longer period of time may be worthy of calculation from the human view-point. Still, the limit is the life-span of the farmer or the tenant's leasehold or the period of one generation (in the case of family farms); this means that the time to be taken into consideration depends upon the character of farming types, and the nature of land tenures. We have just cited the example of family farms, in which calculations might as well be on the basis of a generation; similarly in the case of

tenant farming calculations, from the personal and human points of view, shall be limited to the length of a tenure. If farming is specialised as for example, "plantations," even human calculations will be of more than a certain terms of years in the first instance and later, on an annual basis. These differences are very obvious and have to be reckoned with. Thirdly, the national angle must also be considered. The time span, in the case of a nation is theoretically speaking, without a limit. This is because many decisions are made on the assumption that the more distant future will take care of itself, but this is not always true, for conscientious and enlightened states will certainly plan for the future and not let it take care of itself. The age of *laissez faire* is now over and it is hardly possible for a nation to leave things undecided, even for the distant future. The national time span, for all practical purposes is a definite period, say a generation, or better still, (in these days of party governments who seek the verdict of the people after specific time spans) the period during which a certain government is expected to hold office. All these calculations, with regard to the effective improvements brought about during that time-span are noticed and may be the basis of further calculations. In short, in the study of farm management, the business aspects must be accepted as the basis of all calculations.

Group and the Individual There are two faces of the problem, the individual and the group, their respective interests and fields of work. The second is family *versus* business interests. Taking the latter aspect first, we find that the family interest is paramount and prior to business interests. We cannot afford to take up the details of the joys and the richness of experiences arising out of the family working at a farm that will find its proper place in the course of our discussions. Suffice it to say here that farm people derive a tremendous amount of satisfaction out of their work (their work being of a highly creative nature) and this greatly adds to the meaningfulness of their living. From the business view, the farm provides a good training for the next generations of workers and managers, who may be serving their apprenticeship on the farm. Incidentally, farm life provides the group, experience of people working on the farm. Community life is also strengthened by constant and recurring association of farm people, working together. Still the business and the human ends of farming may close when the farmers work so hard that it injures their health, or when their children are neglected or when the family is ignorant of all that goes around them, as often happens in backward nations, where the farmer's struggle for work is so hard that he cannot dissipate his energies to other avenues. While industrial workers have been struggling hard for several betterment schemes, farm workers have not been so conscious of their rights. Taking the latter, (the group *versus* the individual), we find that overwork on the part of the farm people may result in (group suffering from

a glut of farm products and depressing prices. The pattern of spending on the part of individual farmers also affects the general course of price levels for the group as a whole, more money being spent on urbanish luxuries, as effective in holding down the prices of the land. On the other hand, their craze for holding as much farm property as they could, might bid up farm prices. In the light of these we find that free spending very freely on the part of the farmers would lead to the reorganisation of price and wage levels; it may prove to be unwise for the community as a whole. A relation exists, in the field of agriculture, too, between the volume of output, prices and net income and an analysis of the same could be undertaken on Keynesian lines. In this chapter, it may not be pertinent to detail this analysis: we shall be content to point out that the group behaviour may not closely correspond to the behaviour of the individual.

Agriculture and Society. We take up for discussion the bearing of agricultural behaviour on the pattern of society. We shall see how the end of farming, *viz.* that of raising the net income of the farm is maximised by social impact. Undoubtedly, the most basic factor in determining net income is the ratio of population to the other resources available in the country. Population, in this context, is agricultural population, though the other population, too, has an indirect bearing on the net income of the farmer. But the expansion of farm population may result in increasing the pressure of population on land. This may result in overcrowding for agriculturists. On the other hand, the decline in the ratio of population to resources may mean more income per worker on the farms. The trend of migration of the farm people is also another determinant of their net incomes: if migration is urban-ward, farm income is expected to rise; and if the trend is rural-ward, the trend is reversed. These days, mostly, the trend of migration is urban-ward, which in the backward countries, especially, is easing the pressure of population on land. This is a consideration typical of the locality to which reference is made, and apart from, the above generalisations, no such deductions could be made, as may hold true of agricultural regions. The quality of the population, its composition and nature have a bearing on the net incomes earned by farmers. The population, being fatalistically inclined, does not have the same zest for increasing their incomes, as one inspired by enthusiasm and the will to do farm work zealously. The character of the people has also an important bearing on the net income of the farms, for with a distorted view of life, income may hardly rise, while with a better outlook on life, they may also respond in the same manner. The composition of the populace, too, has an impact on the earning of the farms, for when the majority of the people are farmers, their earnings, due to competitive forces, would most likely fall. Similarly, apart from the mere demographic factors, the impact of other social forces on the income of the farmers is also to be

noted, the status that is given to farmers, also reacts on this outlook and consequently on his efficiency and productivity. Similarly, the nature of social customs and the social background also reflects on the farmer and determines his capacity for work, which, in turn, have their repercussions on farm incomes. The point that needs to be made is that the farm operations could certainly not be isolated and divorced from the rest of the social background and the social canvas, they are a part and parcel of the same and resultant of the social forces and factors. In the social field, the points to be noticed are various demographic factors and forces, and the variants of the social background, such as caste, religion, outlook and customs.

MANAGEMENT OF FARMS

Management of the farming system, is of relevance to the modes of farming and the systems of agriculture. In this section we shall cover a wide range of farming systems the one crop farms, the specialised farms the livestock farms, the diversified systems, and the crop combinations. The selection of these farms and their categorisation is on the basis of farming technique, and not as on the classification in a previous chapter. We have to look at everything from the management point of view. Hence this classification is a little different from that given in an earlier chapter. The classification was two fold, firstly according to farming systems, and secondly according to the types of farming. Hence this is being dealt with, in *two* sections. The *first* section covers the above mentioned systems of farms, while the *second* section covers such specialised farms as irrigation farming, vegetable farming, etc. The object is to bring out such problems as might be relevant to management problems. The management of the farms is shaped by their types. And these problems differ from one farm to another. Hence we could not do justice to these unless we unravelled them in the light of the type of farming undertaken. It is also pertinent to discuss management issues in the light of the institutional set up, for the outlook may be very much influenced by social customs, in fact, in certain societies, management, as understood by scientifically inclined persons, may be conspicuous by its total absence, its place being taken by customary considerations or by routine sanctioned by long usage. Conscientious efforts at the management of farms are a practice only in the advanced West, while in most of the farming communities of the East, the place of scientific management is taken by the routine of farming, sanctioned by ages of experience. That is why this study is being regarded as the unravelling of guiding principles which if followed by a conscientious and wise farmer might enable him to realise the most important end of farming, namely, the maximisation of income through the elimination of waste. Hence, the urgency of the management problem and its relevance to agriculture, especially from the economic angle. It may also be restressed that the classification of

various types of farms, as outlined in this chapter, is not to be regarded as exclusive; it may, indeed, be difficult to come across a single farm which may be of the same type as listed here. Types of farming, as found in actual everyday farming, are of non-specific mixed types, and the nature of their agricultural operations which are undertaken on them are not the same from year to year; types may vary very often.

One-Crop Farms. The one-crop farm is the most elementary type that may be undertaken by any farming community; still, its value in analytical study is not to be underrated; in fact, it provides the basis of all analysis for the subject under examination. Simpler systems should be taken at first, and then the more complex ones studied. From the standpoint of management, one-crop farm is the simplest to operate, especially those which sell produce and get cash in return. As we proceed from the simpler to the more complex forms, the management principles unravel themselves, and we shall have become familiar with each one of them in turn. Soil, climate and nearness to the market may account for the high degree of specialisation that may characterise certain farms, which may also practise rotation of crops. Combinations may also be routine, but that is rare, at least from the theoretical point of view. These farms may be *one-man* farms, *family* farms or *two-man* farms, depending on the amount of their remunerativeness. Several cropping systems may be followed, but the point that needs to be emphasised is the fact of the adherence of the farm to single agricultural produce. Cropping systems may be adopted (after due consideration has been given to the long-time effect on the soil), for soil-conservation, in the sense of its being able to retain its arable character for quite some time. The system of cropping that is to be undertaken, is in consideration of equipment and resources that may be available. Shifts may also be undertaken, but in view of their likely effect on the system of farming. The farmer is the deciding factor in most cases; and his decisions will be more effective than those dictated by land usage and its character. The system of cropping, selected depends on his estimate of relative profitableness of the crops. Since a farmer does not know in advance of cultivation what his yield and income are going to be, he should make some intelligent guess-work about it, and base his calculations on anticipations indicated by his data. He takes the average price, for instance, of the previous years, or the average price over a series of years. This procedure is more satisfactory than depending on the price of the previous year alone. The previous year may have been an exceptional year. Hence the index of guidance must be a series of years. Another consideration that needs be taken into account is "budgetary." The manager-farmer may prepare an estimated account of expected yields and anticipate income from the crop that he cultivates; that is to say, an anticipatory analysis of the yearly income and expenditure on the operations to be undertaken by him in that year. He undertakes to determine, in advance, how profit and loss account stands in respect of several different systems of cropping

taken up by him. In the light of this analysis, does he select that system which, to his mind, proves to be the most profitable? Not that these calculations need be made each year over and over again, once things have been decided upon by him and once satisfied in his mind, about the profitability of his cultivation procedure and the selection of crops that he has to cultivate, he goes on with that very routine. Of course, *check up budgets* may be made from time to time. Another important consideration is the rate of use of fertilisers in alternative systems. The term 'fertilisers', in this context, means the use of manures, sprays and other input factors. The problem which faces the manager, is that of the amount of investment that pays best on his farm. The principle of diminishing returns is also taken into account. More of the fertilizers might, in fact, burn the plant instead of being useful and nutritive to it, that is what we did learn in a previous chapter "Modern Farming". And then each crop has its own needs in respect of fertilizers, these particular needs have also to be reckoned with. Another factor responsible for selection of crops is the contour of the land, which may influence the farmer's decisions as regards the particular crops that *could* be cultivated on it. Theoretically speaking, both the contour and the fertiliser factors have to be taken together, for in the matter of fertilisers, the farmer must take account of the *receptivity* of the land and the farm, and this is to a considerable extent determined by the contours of the land. The use of fertilizers is limited by the point where the last (marginal) unit just pays for itself. This principle is an accepted one and borrowed from the field of economic analysis. Other costs of harvesting and of storage, and those of machine-operating, trucking and warehousing, are also to be considered in the selection of crops. The input-output relations have also to be taken stock of before being launched on the cultivation of one-crop. The amount of labour and cattle required for the purpose of farming in the cultivation of certain crops have to be analysed, before the farmer could make his final selection. In commercial farming, the factor of quality has also to be reckoned with, for farm income is dependent on the quality of output, and more so in crops for commercial consumption. Weed control is a problem which the one-crop farmer has to face. Another factor that enters his calculations is that of the possibility of a shift from the present crop to another, and the result thereof. Other considerations are those of labour and equipment that might be expended on the crop and its availability. Scale of operation has also to be decided upon.

Specialised Livestock Farms Above mentioned principles apply to one-cattle farms, with some modifications. These farms may be termed as *animal speciality* farms. The simplest case is that of a livestock farm that not only sells livestock and products but buys all the feed that it requires, so that the complications arising out of the fitting in of feed and livestock enterprises into each other may be avoided. This is the simplest case in the range of livestock farming. Some

of these farms resemble factories rather than farms. The operator buys raw materials, feed and cattle; he hires labour, and in return, he turns out only one product. Feed having to be purchased from outside, these programmes are in no manner dependent on farm production for feed. In these farms, various problems that have to be taken into account are those of the *rate of feeding* (instead of the rate of fertilisers) by which is meant the rate at which the feeding of the cattle is undertaken, in relation to their milk and meat yield. Charts could be prepared of the varying rates of feed and yield per cattle and most profitable ration could be fixed for each one of them. This *combined* rate, feed and ration (including their composition) is the considerations taken into account in these farms. The farmer has also to calculate the *nutritive ratio* of fodder : the ratio of the proteins to other nutrients; this ratio is a determinant of the rations which the cattle may be given. Another problem is the expenses to be incurred in *maintenance* as against *production* of cattle. This corresponds to the input-output ratio, that we took into account while discussing management aspects of the single-crop farm. The capacity to convert feed to milk and other cattle yield is much limited and in unlimited amount of feed and fodder given to cattle may prove quite a waste. This holds good both for milk- and mutton-producing cattle. Feeding of cattle should, therefore, be on the basis of highest or optimum profit. In this respect, the prices of cattle products have also to be reckoned with, for these are out of the farmer's control, being determined by external forces of demand and supply. The rate of feeding that is most profitable, is that at which cattle yield is at the maximum, and this rate, apparently, varies with the relative levels of prices obtainable. Examining the composition of the rations, we have to state that the economy depends upon nutritional values of different feeds and their relative prices. Apart from the usual composition of balanced rations in terms of fats, carbohydrates and proteins, there is another aspect; that of *roughages* and *concentrates*. Under the former category, are included hay, pasture grass, silage, while under the latter are included grains and oilseeds and rich meals. Even if fed wholly on roughages, cattle are able to maintain their health, but concentrates are also necessary for the improvement of the qualities of cattle yields. A proper proportion of the two has to be calculated for the purpose of maximum yield of cattle produce. More concentrates are used at higher feeding levels. The main problem in the composition of the ration is the one of balancing it : this is what a wise farm manager finds out by actual practice and experience, for the ratios will definitely differ from cattle to cattle. One has to be vigilant about the relative prices of the feeds and the fodders, though the combinations of feeds and fodders must not be ever changing; the cattle become accustomed to one type of combination and later adaptability may be difficult. Buying feed at the cheapest rates, and at a proper period in the year, are important aspects of the management problem. The next problem that faces the livestock farmer is that of *replacements*, that is of herd-replacement. Buying and selecting of the cattle is the first phase of this problem; for judgment in selection may

mean success or failure of the enterprise, and this judgment is born out of the trial and error method. The second phase is the sale and disposal of stock which may have grown useless. This is a problem particular to each single head of cattle, for its replacement and disposal is an individual problem. Rate of replacement, (the rate at which cattle are replaced, the older ones being disposed of, the fresh stock bought and the whole stock replenished), and the rate of feeding are interrelated to a very great extent. The heavier the rate of feeding and the narrower the nutritive value of fodder, the sooner the cattle pass their prime and become disposable. Another headache for this farmer is the relation between output and the selling prices. As in other fields of economic life and economic activity, so also in this particular branch of economy, prices and production are closely interrelated. The methods of sale also affect his income but not materially, at least from the analytical point of view. Other considerations are the scale of production and the labour needs of specialised cattle farms, both these are interrelated.

Diversified Crop Farms The source of income for these peasants is more than one farm, usually two or three farms. The principles of farm management concern themselves with the combination of crops, and of enterprises. The problem is similar to the one that we come across in the field of economic analysis. There could be as many crop combinations as many farms and as many farmers. And then these combinations could not be regarded of a permanent nature. The question as to why crops are combined can best be answered by studying economic phenomena. We have already referred to supplementary, complementary and competitive operations, when talking about agricultural operations, the same could be said of the crops. *Supplementary* crops make fuller use of farm equipment while *complementary* ones do not call for much labour and power. On the other hand *competitive* crops are those that *compete* for labour and equipment at the same time. With these introductory preliminaries, we proceed further in the analysis. Other points are as under. The fertility of soil is kept in better balance if crops are grown in succession, for different crops make different demands on different soils and the plant nutrients therein. Legume crops, for instance, are able to transfer nitrogen from the atmosphere to soil. The roots improve the structure of soil, while the close growing crops reduce erosion and add much needed organic matter, when ploughed under the soil. Suffice it to point out that crops may be combined for soil conservation. The second reason could be the rotation of crops some crops would fill the rotation gap. These crops may be *companion* crops or complementary ones. They help other crops and are grown for this reason. Income and its stability is also responsible for their combination excessive reliance on one crop may lead to unforeseeable loss to the farmer, who would like to have more stable income and more inflated revenue. While one crop may suffer adversities of weather and prices, a good combination of several crops would not be

the victim of such uncertainties. Hence, crops may be combined, simply to avoid over-dependence on one crop. Also the continued use of land for the same crop, year after year, and, season after season, may lead to deterioration of land and its ultimate exhaustion, too. Hence, the rotation of crops becomes imperative from the purely soil point of view. Some plots of land may have a variety of soils and lands which it may be better to utilise if several crops are grown instead of only one. A part of the land may be well irrigated, while other parts dry; hence two distinct types of soils may be cultivated so that the best may be got out of land. The crops best suited to each plot would be sown. And lastly, some farmers, in view of their better efficiency and better capacity, may be able to grow more than one crop. This may also be necessitated by the circumstances of the farmer, who may not be inclined to waste his time, or idle away a part of the year. More enterprising farmers may take to the growing of more than one crop, while the lazy stock may not do so. The other subsidiary considerations that may also be noticed are labour needs and its availability. There is possible surplus labour which may not be kept fully employed except by the introduction of crop-combinations. In the areas where the pressure of population on land is excessive, crop-combinations are advised. There is, in addition to the quantitative aspect, the one of the quality and the distribution of labour in order to provide for different types of labour: a certain farm family may have types of labour at its disposal, and to utilise the same it may be necessary to adopt crop-combinations. Diversified farming may also be necessary for equipment to be more fully and completely utilised. In the interest of mechanisation, too, diversified farming may be indicated. We have already listed the various advantages of the use of machinery on farms, and also talked about the recent advances to suit all pockets and all farms. After having discussed the reasons for crop-combinations, we have to discover an ideal crop-combination. There are various considerations that may have to be taken into account. In the first instance, the *comparative advantage* principle (the same as in general economic analysis) is to be applied, but with some special caution. Both the *ratio* of costs (the two-way comparison) and relative advantages (both of growing the competing crops in one area or in the competing areas) have to be noticed and weighed, in order to arrive at the correct combination formula. The true comparative advantage is not determined until these two comparisons are made so as to determine which crop combination is the best. In the case of rotation of crops, the cropping systems are compared instead of single crops. The relative advantages of cropping systems are in terms of climate, soil, distance from the market, labour supply and managerial skill. Put in economic terminology, complementary, supplementary and joint-product relationships between products, farms or crops, are material in diversified farming. The measurement of comparative advantage is in terms of gross returns, or net cash returns or returns on labour basis or relative profitability of these.

Feed and Livestock Farms Having understood the implications of diversified crops and crop combinations, we now tackle the problems facing the manager farmer in feed and livestock farming. He does not have to tap outside resources in the matter of finding fodder for the livestock that he rears. The feed is to be converted into meat and livestock products, the essential character of all these farms is that they devote their lands to feed and fodder crops and sell the same in the form of meat and other livestock products. The guiding principle here is the one of balancing fodder to the needs of the livestock enterprises and the adjustment of the one to the other. The objective is to fit in the feed and the livestock both as to quantity and type, with a view to securing the highest return. Sometimes, however, it may pay to buy extra feed and keep more livestock, or alternatively fewer heads of cattle and sell surplus fodder, but that is an exception and not the rule,—a possibility only in the emergencies, when for example, feeder crops have suffered a loss or cattle depleted. Normally and fundamentally, these farms are complementary in their relationships to the twin enterprises crops that supply raw material to be converted into meat and the cattle products which are sold to the market and also livestock which in turn contributes farmyard manure for cultivation processes. This combination (and it is usually a common combination) keeps labour employed throughout the year. Fuller utilisation of the various by products, e.g. straw, stalks and corn waste could be utilised. These systems are more self-sustaining. Erosion is avoided for the simple reason that crops are also grown and reliance not only placed on cattle farming, or only on crop-farming. Often these farms are characterised by more intensive cultivation than diversified crops but that does not appear to be the general rule. The usual considerations determining the nature of agricultural operations, are the rate of feeding, composition of ration, and pasture management. The first consideration is rather important which for the simple reason that without an estimate of the same the possibilities of a correct adjustment between the number of cattle and the amount of fodder to be grown are remote, could be hardly made. Waste of fodder is as bad as the underfeeding of cattle. The economy of growing one's own fodder is neutralised especially when fodder is purchased from outside. The composition of ration has a bearing on this problem because the fullest use has to be made of the types of fodder grown, and the composition of ration has to be drawn from fodder crops grown, as indicated by ration needs of cattle. Pasture management is of supreme importance to dairy farming, and the consideration of the same has to be relegated to a section below which is devoted to the economic and management aspects of dairy farming. The type of pasture management that may be favoured is influenced by the judgment that dairy farmers pass as to the value of the pasture land *vis à vis* the needs of cattle raised on the particular farm. The other consideration relates to budgeting.

Crop Livestock Farming. The next variant is crop and livestock farming. This type combines significant amounts of crops (often cash crops) with livestock production. They may also be described as *general farms*. The sources of their income is from both crops and livestock. Farms of this type are having joint, supplementary and complementary relationships in their complexity and in variations. Major and minor enterprises may also be undertaken on these farms. The enterprises which have supplementary and minor character are designated as *sidelines*. Other enterprises have a significant place only because of *by-products* and the *joint-products*, the latter being more important. This type of farming is favoured because of certain distinct advantages. *Firstly*, they provide a fuller opportunity for the employment of land, labour and equipment. *Secondly*, more land is employed than under other enterprises and variants. *Thirdly*, the farm income is more stable, than in other types of farming for the reason repeated above. And *lastly*, the hazards in the form of diseases and pests are very much reduced and minimised. There are disadvantages, too. The farmer may not be quite up to the tasks incidental upon the type of enterprises undertaken. There may be marketing difficulties especially when very small amounts of produce are grown. Again he may not have sufficient equipment to carry through the enterprises; this form suits the co-operative organisation. *Five* such types of crop-livestock combinations could be listed: cash crops with some livestock; mainly livestock farms with some crops; the equally interpressed types of farms; livestock with fruit crops; and livestock farms with equally good cash and other crops. But this classification is of no practical use, for the argument as it unfolds itself, will hardly take this classification into account. Suffice it to notice here that these farms are only an extension of the diversified ones. Various combinations, that prevail, are according to the principles enunciated above. But on these farms the organisation is highly flexible and has many variations, indeed too many to permit enumeration here. Crop rotations must also be rather several and indefinite. In the matter of livestock; the major decisions relate themselves to the type of cattle bred; dual- and dairy-purpose cattle are most frequently kept. In the matter of crops, major decisions refer to quantity of corn to grow and feed; selling grain and corn brings cash while feeding it may also mean economy if the number of cattle is large. There is the problem of adjustment between crops and the cattle and of the most profitable combination, with a view to maximising farm income. Another consideration is that of fitting in the miscellaneous enterprises into each other. All these problems have been dealt with above and the same conclusions of this analysis apply here.

Family Farms. These farms are the most common of all the systems of farming undertaken in any country. They are the most popular. We have, in the paragraph "Systems of Farming" given a descriptive account of family farms, here we intend to find out how

decisions in these farms are taken. One thing may be noted which is that production on these farms is mainly for the sustenance of the family and not for market, primarily, though the surplus may be disposed off in the market. Hence the evaluation of farm produce would be from the point of view of the family, that would be the criterion. The worth of the produce to the family is the main consideration. Articles of family consumption may be purchased at the local store or produced at the farm. The farmer has to weigh the relative advantages of the two procedures. The transportation costs both of hauling the farm produce to the market and of carrying the supplies home have to be compared and a decision made in the light of this analysis. Some products it may not possibly produce on the farm, they must be purchased from outside. In this case, the ratio between the farm grown produce and imported products has to be noticed, and those will be produced as may have a favourable exchange ratio as between farm and outside produce. And a calculating farmer would also weigh the relative advantages of consuming the produce or of marketing the same, or producing for home consumption *and* for market. All these points have to be taken into consideration and then decisions made *about* selection of crops. The farmer has also to take into account the relative advantages of securing more *nominal* income as against getting more *real* income. Usually family farmers are more concerned with inflated real incomes. It is not always that the gain in the one is at the cost of the other, sometimes both may increase together. Real incomes are increased if labour and other resources are devoted to supplying the family almost as fully and completely as possible. But that course of action might result in their buying less of the products of other farms, ultimately reducing the market demand for food and incidentally also depressing the prices of farm produce, other things remaining equal. One factor that needs to be taken into account is that even though purchasing from outside rather than producing for home consumption may be possible most of the farmers may not adopt that course of action for the reason that this might result in the insufficiency of adequate diet and deterioration of its quality. Family farming is mostly 'provision' and 'food farming'. It is possible that for want of suitable equipment and machinery, the family farms may not be able to control pests and diseases, nor improve their qualitative output much, but the fact remains that they do provide good diet and good enjoyment the joy of farming and recreative work. In the light of the above analysis, food farming is easily the most important job on the family farms. Nutritional standards have to be maintained and food energy kept at the same level for family members. Diets have to be maintained at an adequate level. Planning food for the family is therefore, a major task for family farms. Decisions will have to be made as to what foods be produced for the family, and how much to produce of each. The theoretical estimate would be to produce essential foods but this theory is difficult to translate into actual practice. Practically speaking, these

decisions could seldom be reduced to definite terms. Calculations would, therefore, be made as to the returns from investment made in producing food and raising produce for the family. Data may be used for this purpose, for without this, it would be impossible for the farmer to arrive at correct decisions. For those foods which are also produced for the market, decisions will have to be made as to their quantity for the family. The problem assumes a very difficult complexion when the income of the family from the various sources is rather low, for then the peasant may be tempted to sell produce and food to the market at the expense of underfeeding the family. In another situation food cannot be produced for the market profitably but with advantage for home use. In such a situation, the farmer has often no choice but to wait till the system of transport improves to make the produce marketable. Storage is also another problem that may raise itself to the family farmer, especially when conditions are difficult in respect of weather. The amounts of food that may be produced would be determined by food budgets prepared by the farmer in the light of other considerations enumerated above. And a production plan will have to be chalked out in respect of production on family farms.

SPECIAL PROBLEMS

Questions raised by various types of special farms are now proposed to be discussed, after we have equipped ourselves with a detailed and more intimate knowledge of various factors responsible for the decisions made on various farm-combinations. Without assessing the situation from the point of farm-combinations but from the angle of specialisation that works itself out in the field of farming. Most considerations remain identically the same as analysed above, but modifications are introduced in respect of certain specialised types of farming not covered in the above outline of the subject. Some alterations may be required in the sphere of management and others in the calculations of planning modes.

Farm Preferences. Priorities undergo a change, both for the farmer and the planner. Speciality crops may concern themselves with cropping of wheat and cotton or sugar and the problems that arise therefrom may be of a technical nature and generalisations hardly possible, except in a very narrow range. Still, this study is instructive in that the special problems attendant on specialised crops may be pertinent from the point of view of national economy. Generally speaking, specialised type is selected in the light of soil conditions and the regional adaptability of environmental conditions. It would depend on special aptitudes of the farmer, and the resources at his command as also on the environmental conditions in the neighbouring vicinity. For instance, irrigation farming could not be undertaken without ample resources in respect of water and its abundance. For horticulture and vegetables, nearness to markets is indicated and, in fact, absolutely necessary. Hence the locational factor is another

determinant Speciality crops, which we attend to in the next section, also vary in their demands on farmer, land and soil characteristics. Hence the natural factors determine to a very great extent the nature of farms that may be undertaken. Equipment is another determinant of specialised farming, and for certain crops and agricultural enterprises, to be efficiently run and remuneratively launched, must have a minimum of certain basic machinery and equipment. Next, the human factor is also to be weighed, for human aptitude is important. Influencing factors also include the locale of farms, the environmental effect, the traditional modes of farming and the various other institutional factors and forces operating in that region. For instance caste restrictions did for quite a long time limit certain kinds of speciality crops to certain castes and other 'higher' castes were not to undertake these professions nor were they to take to farming not prescribed by the social code. There may be certain competing enterprises that may demand farmer's attention and even tempt him but he would take up an enterprise that gives the highest income, consistent with the least effort. The input/output ratio shall have to be taken into account on all the different variants open to the farmer and the entrepreneur. In short the farmer would constantly apply the *principle of choice* in the matter of selection of crops and farm enterprises. But this principle could only be applied to the limited range of soil peculiarities for if soil is of a specific type the farmer could surely not undertake enterprises, he may like to, in pursuit of calculations he made he may have to keep in view the suitability of soil and other natural factors. The sum and substance of this analysis is that the specialised problems in farming and speciality crops could only be successful if all factors co operate.

Speciality Crops These may refer to cereals (wheat, rice, etc) or to commercial crops (e.g. cotton or flax) or to other crops like sugar and beet. The special problems raised in their growing, from the view point of the farm manager are peculiar to these crops and no generalisations could be made nor any deductions possible from this study. In the first instance the farmer would like to assess the total situation not only in the national or regional economy but also in the world economy, for the remunerativeness of crops, undertaken to be cultivated would depend on world forces, too, as was proved by the depression in the thirties. Secondly, the manager must take into account production adjustments possible in his crops, for in the times of stress and emergency he must be able to switch over to another speciality crop. How far is a production plan elastic and adaptable is another consideration that goes to determine the nature of his specialisation. Adaptability is also with respect to natural factors like rainfall, topography and soil conditions. Incidentally, the farmer would give due weight to the effects of a crop on soil, e.g. on soil erosion and the retention of moisture in soil, for soil conservation is an important aspect of cultivation of crops. Land tenures are still another factor to be reckoned with. When dealing with this topic, we must analyse various implications

of the system of land tenures in their impact on the systems of land cultivation. Certain special crops it may not be profitable to cultivate, in a certain system of land tenure; for example, wheat would certainly get a preference over cotton in the system of peasant farming, which may correspond to family farming. Mechanisation and considerations of equipment also influence the selection of crops. Certain crops are more easily mechanised, while others resist mechanisation; for example wheat may be more adaptable to mechanisation than cotton farming is. The relation of cropping operations to labour supply is also a factor to be taken account of by the farmer, who seeks to manage speciality crops. This labour aspect has some relevance to the rate of mechanisation, for on a farm which may have labour enough and to spare, mechanisation may not be a valuable determinant. The fertilizer needs and the issues of drainage and insect and disease control are other points to be noted in this context. Weed control and allied issues also arise in this connection. Market adjustments are not to be ignored; attention is to be pinned to this point. Above are mentioned some of the general conditions and considerations which may be borne in mind when selecting specialised crops. But it may also be pointed out that speciality crops only pay in the event of large-scale farming, for that minimises the overhead charges in respect of marketing. And in large scale, speciality crops may not be a frequent and common occurrence.

Irrigation Farming. Irrigation is a major issue in the sphere of farming. The problems of irrigation present a wide range, for without irrigation, most of the crops would be non-existent and the lands now under cultivation quite barren. Irrigation farms are of several kinds and not only the usually cultivation ones. Facilities of irrigation may be extended to pasture lands, or to fruit and vegetable farms, or to speciality crops, or to diversified farming, or to dairy farms. Irrigation projects might have been organised by individual and partnership bodies, or by co-operative and mutual enterprises, or by public corporations or commercial concerns, or by government agencies. In fact, these agencies are the most important of them all, for irrigation works cost a lot, while the service may not be very costly to the farmer. The commercial concerns, supplying irrigation facilities are not much in favour, for the simple reason, that the cost of service to the consumer would be rather high, the aim of a commercial enterprise being the highest profits. Individual and partnership projects are seldom met with, for the resources at the disposal of the individual and the partnerships are not very extensive nor unlimited. Mutual and co-operative enterprises are useful from the peasant's point of view, for the middleman is eliminated and the costs of irrigating a particular plot, therefore, very low. Another group of problems (which are related to the operation of irrigation farming) relates to the access of water. This right to water and its accessibility is the most important of all the points relevant to irrigation farming. Water rights

are now more definitely known than in the past, still some trouble may arise, and litigation may start. With 'full' water rights, the farmer is ensured an adequate water supply for the cultivation season. But in other cases the farmer has only such rights as are limited in their scope. The farmer may only be permitted to use the flood water. Some laws govern this problem and it is not our purpose to go into the details of these laws, suffice it to note the more important fundamentals of the same. The *riparian doctrine* establishes the right of the owner of the land to the use of the water to the nearby stream and these rights could not be lost by non use. Then there is *priority* established by the doctrine of 'the first to apply, the first in right'. These rights apply to the use of surface water, but the question of the underground water is not a little different. The laws in regard to underground and percolating water are very much diverse from state to state. Mostly they belong to the owner of the overground lands, though this ownership may be much limited in public interests. The price charged for irrigation water may be according to the *cost of service* principle or the *1/10 of service* principle. But it is mostly the cost of service principle that the enlightened states enforce, while the value of service principle may also operate in certain places in the initial stages of irrigation farming or a *betterment levy* imposed on the newly irrigated farms. From the point of view of farm management, the above controversy is not of much significance, though we may have occasion to refer to it at a later stage. There are points and arguments for both systems, and one has to recognise the fact that the cost of service principle could never be applied in the initial stages of irrigation projects, for the total costs may be difficult to realise from the users of irrigation facilities, while the value of the service principle may not be fit for application in the case of running irrigation works. A compromise formula may be evolved some part of costs of irrigation facilities, together with betterment levy imposed on the non agriculturists. Technical factors also influence the utilisation of irrigation works. The advantages of irrigation farming are too well known to be listed here. The danger of over irrigation has to be guarded against, for that may cause depletion of soil and its erosion. And the loss of irrigation water is also to be guarded against for that may raise the cost of the service and also result in a lot of more waste. The frequency of irrigation (a technical problem) depends upon the depth of soil and its ability to retain moisture and the water needs of a particular crop and other natural factors. The amount of labour required depends upon the *slope of land, the character of soil, the size of irrigation channel* and the efficiency and structure of irrigation system. Irrigation also brings in its train some problems of application of machine. The two may be fused well, in fact irrigation may as well be mechanised. And lastly, the twin problems of irrigation and drainage are interlinked, especially where irrigation has resulted in waterlogging and the like evils, which require an immediate solution. It cannot be pretended that this

survey is either exhaustive or detailed, it only familiarises the reader with more important aspects of the management of irrigation.

Horticulture and Vegetables. In the field of fruit and vegetable growing, the major difference is that of the life-span of plants. As pointed out earlier, fruit tree does not mature for a number of years and then it is only after a few more years that fruit-bearing begins. Fruit and nut-growing are truly long-range enterprises, each plant going through a life-span resembling of a man. Often are these enterprises treated as subsidiary; there may be back-yard orchards, growing some fruits, and vegetable gardens supplying vegetables to the family; these are excluded from our study. In the field of fruit-growing, the locale of farms is determined by climate, for fruit are very sensitive to climate. Climatic requirements are very much more exacting for the fruit-tree than for any other agricultural venture. Soil is the second factor determining the locale of fruits. Special characteristics of fruit farms may be noted; they utilize very little land, while investment per acre is relatively high; the specialised fruit-farms have very few cattle, only workstock and some dairy cows for domestic subsistence purposes; these farms hire relatively large numbers of labourers and the workers' output is easily checked and measured too. Large amounts of labour input are required for purposes of prying and thinning, as also for picking fruit and packing them. Lastly, fruit-growing requires lot of preparatory work. Management problems relate to the question of the size of business, the selection of site, and of species and varieties, control of diseases and pests, the age-distribution and replanting of fruit trees, the problems of marketing and production adjustments. In regard to the last question, the difficulties are rather insuperable, for fruit farming involves long-term commitments, longer than is the case in other types of farming. Bad judgment would always be difficult to rectify: that would be adverse to fruit-growers. The problem of selection of fruits to be grown is, therefore, of immense significance, for it is a long-term commitment. In the case of *vegetable* farming, the life-span is much shorter, the assortment of species much wider, in the same range of climate and soil. True, that a few farms grow only a variety or two of the vegetables (this is identical with the case of fruit farms) but the majority of them go in for a larger variety of vegetables particularly those grown for the market purposes. Hence vegetable farms resemble to a great extent, diversified farming, which we discussed above at length. Commercial production of vegetables has been much increased in recent times, in view of the great consciousness during the war period about the growing of vegetables for domestic purposes. There are at least *five* major types of vegetable farms: those located in the suburbs of most of the cities; large farms in the outer regions, specialising in the production of one or two vegetables; farms which produce both vegetables and fruits in different assortments; farms which undertake vegetable gardening as a subsidiary

occupation, those farms which produce several vegetables for canning purposes, and lastly, those farms which deal in vegetable growing and fruit growing both for fresh supplies and for canning their surplus produce. Regarding the significance of this classification, let it be admitted that, from the point of view of the manager, this is not so pertinent except that it is a convenient type of categorisation of various farms. Location of farms is determined by the considerations of soil, water and markets. The vegetable farms differ from fruit farms in that they can more easily shift to another type of production. The result is that while the older vegetable farms may go out of production new farms get under the plough. They have also rather small acreages. *The main management problems relate to the sequence of crops and the planning of them in advance, in both these farm types.*

Dairy and Poultry Farming Some problems incidental to dairy farming have already been adverted. We have discussed several aspects of livestock farms, here we shall notice management aspects of the same. Dairying seems to be on the increase everywhere, and that is why the subject is getting more and more important. The unique feature of this industry is the diversity of uses of dairy products—milk, butter, cheese and evaporated milk. Costs of dairy production have not been brought down as much as they have been in general agricultural production. The costs of feeding and maintenance are important factors. Replacements and new purchases are issues similar to those discussed in previous sections. The questions relate to the size of the herd, the time of freshening milch animals, and marketing. Such a size is favoured as may bring the best returns to the manager, and would be well maintained, the costs are also another factor. These issues are similar to those bearing on the question of the size of farms. The question of freshening the animals is tackled from the point of view of the increase of milk yield. It involves the broader issues of selecting breed. The question of marketing is also complex, for milk products are liable to souring, if not marketed immediately. Most dairy farms are situated near cities and towns and the question of marketing is solved without much difficulty. Dairy farming involves long range investments. Producers have to look and plan ahead if they desire to succeed. Information is, therefore, important from the point of view of the manager in order that he may be able to plan out the enterprise. He should know the trends of production in competing areas, the price trends, changes in land values and other similar issues. In regard to poultry farming, the analysis is similar to that of specialised farms. Poultry farms deal in eggs, chicken ducks and turkeys, etc. The questions that confront the manager are related to poultry feed, (which may preferably be home feed so as to reduce the cost) and that of seasonal adjustments: the aim is to balance the extra costs involved in any seasonal programmes against the extra prices received. The rate of feeding involves the same considerations as enumerated above in a previous section. The degree of specialisation is according to conditions

favouring it. In regard to breeding, the same considerations may prevail as in dairy farms. The aim of breeding is to improve the productivity of the flock. And then there is the question of the adoption of the newer scientific methods of breeding and feeding that have increased output where tried. Issues may centre round variations in the capacity of females and males. Much labour is not required on poultry farm; the laying houses once built, the same routine labour fits them all, and a single labourer may be able to manage the flock with occasional helpers. The combinations farming and sideline ventures are also quite common in both, dairy and poultry farming.

Cattle and Sheep Farming. We do not reckon ordinary farms where sheep and other cattle may be bred and fed, but where cattle get their feed by grazing about. It may be pasture grazing or grazing on the wild. There are nomadic tribes who move from place to place with flocks of sheep and cattle and then there are the commercial "ranchers", but who have fixed headquarters. The former are mostly self-sufficient, and one comes across these nomads in the regions of Central Asia, North Africa and some parts of the Americas. The commercial entrepreneurs are found in grazing areas, nearly everywhere; they are not self-sufficient and may have to buy grazing rights. Most of the pastures are open only seasonally; and in the non-grazing season, feed that is to be supplied is largely that of hay *plus* the fattening ones. Requirements in respect of land are very urgent and grazing can only be carried out where land is abundantly available. Access to land is, therefore, very important; hence land tenures also assume some relevance in this study. Coming to organisation, we find that there are many variations. There are, however, some distinct types: those which buy animals fatten them for one season and sell them in the market, *i.e.* steer ranches; those which breed animals and sell the calves away; and those which have herds of all age groups. This classification has been made on purely descriptive grounds, and has no analytical value. The problems that face the "rancher" are those of the growth rates of cattle which mostly correspond to the availability of feeds and grazing facilities, the rate of stocking (which is a typical input-output problem except that exact measurements are not normally possible) and that of improvement. The grazing range must not be overgrazed and the manager has to guard against it, for grass will be considerably depleted away. In regard to the question of improvement, the manager has to think of the means of fencing, conservation and provision of the means of watering and that of storing forage. Grazing may be undertaken direct, or on the deferred system, the latter being more useful for beef-cattle production. Efficient stocking has to be done in order that the fodder supplies do not exhaust soon, but are permanently kept. And lastly, there is the problem of risk and uncertainty which must be tackled in ranching: these arise out of the usually fluctuating business conditions. Sheep ranching has much in common with cattle ranching; it is based even more, on the grazing.

of the native and local vegetation. Management problems are also similar, except that a greater stress is on the quality of wool (if that is the objective) or mutton or lambing. Mostly, it is the *combined* ranching that is practised, with the result that a manager with extra ordinary ability could alone manage the whole show. The problem is that of balancing cattle, sheep and goats on the same ranch, that is the proportion which may be the most profitable, and to determine this proportion is the object of analysis and management. And secondly, the manager must also find out the *optimum* organisation and the *optimum* size of the flock for his purposes.

Farm Woodlands Our job in this section is to unravel the problems of farm woodlands and to find out what combination, if at all permissible is the most useful. Woodlands range from the small ones which supply timber for fuel purposes for the family to those which supply timber for other purposes. The management problem generally speaking is that of keeping the proportion of land producing timber instead of pastures, woodlands and crops. This would raise the issues of the suitability of land for the purposes of growing different crops and timbers, which are specific (due to topography, composition texture and structure of the soil). The usual method of arriving at the decision is that of weighing the anticipated expenditure and receipts from the same land when put to alternative uses. Decisions will have to be made much in advance and some budgeting may be necessary for correct decisions to be made. Another set of decisions relate to the intensity of silviculture at the one extreme timber may be left of itself while at the other end it may be protected, pruned, thinned, cut, weeded and also planted by planning. Labour supply, wages and prices would be important determinants of final decisions made in this matter. Problems of a technical nature, too, face the manager of the woodland: the choice of the species, the density of the stands, the methods of weed and disease control and correct reproduction, all these are technical problems which also face the manager. Another important aspect of the issue is the skill relating to the general aspects of silviculture. The supply of labour is another headache for the manager and the entrepreneur. The hirings are mostly of a seasonal character; the problem is that of labour availability. The forest farms may be of several kinds: pure forest trees are seldom met with on *subsistence* farms and *exchange* farms. The pure forms are those which are only forests and have no other kind of produce. Subsistence farms provide fuel and timber to the family, (corresponding to the family farms), while in the last category are those farms, called *combinations* these exchange their products in the market. The supplementary products which may be raised from the forest farms are also pertinent considerations. In fact, these farm woodlands are too small to yield any commercial income from wild life management, another source of income from the forest farms. Some woodlands have also another source of income, fisheries may thrive in small ponds to be found in these wood

lands. Additional source is processed forest produce. The state could also help the woodlanders in the prevention of forest fires, in the control of diseases and pests, in research relating to management and marketing, in planning the woodland, in extending credit to the farmers and in miscellaneous other respects. Forests are valuable in anti-erosion drives launched by the state, and in soil conservation activities. In view of the fact that forest plantations are a long-range investment and are often neglected by individual farmers, these are now being brought under state ownership.

The Inference. The lessons that may be drawn from the above bird's-eye view of the problems of management of several types of farming merit a special place in this discussion. Certain management principles crop up as distinct ones, and have a special relevance and application to various forms of farming. One of them is the principle of relative advantage; this seems to have found a universal application in the matter of selecting the type of farming which may be practised by the farmer. This is also the guiding principle for the combination of various types of farming, for it points to the *best* combination that could be arrived at, in the light of circumstances operative on a certain farm. This principle states that relative advantage may be secured by selecting a certain type of farming as against another type. We have discussed various aspects of this principle elsewhere, but suffice it to say at this place that the *relative advantage* is not only calculated in respect of competing crops and competing combinations alone but also in respect of supplementary, complementary and subsidiary crops and their combinations. The various management problems that crop up in nearly all types of farming are almost identical: they relate to the locale and siting of farm enterprises, the rate of return in the selected and the other enterprises, the method of operation, and the problems of marketing the produce. Other related problems include organisational aspects, the labour supply aspect, the maintenance aspects and the purely business and accounting aspects. The manager should be well advised to have a budgetary review of the whole enterprise and see if the enterprise is or is not exercising the various economies that it could effect and is also doing its best to eliminate waste, which may lead to progressively high costs. Thus the various aspects of management problem are all interrelated and have to be tackled at once. At least they could hardly be isolated by the manager. An assessment has to be made of the different methods of approach. On the cultivation crops and farms the law of diminishing returns has to be combated, while on the cattle farms, attention has to be devoted to the rate of feeding as against the return in terms of the yield from the cattle. The guiding principles may vary only in the details of application to the different enterprises of the farm life, but the essentials of them all are the same in most respects. The point that needs to be re-emphasised is that the ends in farming are to be realised and the problem that faces the manager is how best to realise those ends, consistent with his resources, physical,

environmental, natural, human and monetary. The chief end in farming as described above is the maximisation of farm income though the subsidiary ones are the retention of land fertility and the conservation of land. The management problem is therefore, not only one of Agricultural Economics but also relates itself to an understanding of technical aspects of agriculture in all its phases.

SUCCESS IN FARMING

No study of farm management would be complete unless we enumerate various factors responsible for success in the business of farming. A discussion of these factors is important from the point of view of Agricultural Economics too. For the ultimate aim of the study of this science is to make the practice of agriculture more lucrative from the economic viewpoint and also more useful from the national one. In this section we intend studying the several forces, which contribute to the success of farming enterprises of diverse character. The forces are of a multiple nature and no precise formula could be advanced to ensure success in the sphere of farming except that conscientious and wise farm management should go far to the achievement of that goal. Success in farming enterprises depends on the efficiency of the farmer and the capacity of the land and that of the manager. By the capacity of land is meant the fertility of land and its suitability for the enterprise selected. On the other hand scientific management would also go far to ensure success in management of the farm. This would include a survey of lands and soils and a good system of book keeping and accounting and the compilation of land and farm records regarding output and the crop production and cattle yield. And lastly the personal factor also counts for much for without active co-operation from the farmer even the successful undertakings would simply limp. Farmer must be enthused enough to devote himself to farm undertakings in a whole hearted manner. The efficiency factors should be encouraged while waste element should be eliminated quite. Agricultural policy of the State, also, counts for much in the matter of successful farming. Land tenures, too have their say in the matter. In short several factors and forces act and interact in successful farming. Farming involves d monetary not only technical and economic, but also of a financial and calculations, nature. The long term and the short term planning has to be initiated by the farmer and a good balance struck between the two. We have time and again stressed this fact. The general agricultural policy of the individual farmer must fit in with the general agricultural policy pursued by the state, for in the case of a conflict between the two, the individual farmer would stand to lose considerably, while with a correspondence of the two, the individual peasant would gain. The input output ratios, on which so much emphasis was laid in the discussion of typical farming *versus* specialised farming must also be kept in view by the ambitious farmer. And above all,

the enterprise must be evenly balanced in order to achieve some measure of success, for in case he is always experimenting and making alterations in his original plans, he would meet with success only by a miracle. All these considerations must be kept in view by an efficient manager.

Measures of Success. Several measures of success obtain and from several points of view; that is why we have elected to give a brief survey of the measures of success before we attempt to define "success in farming." The *first* measure is that of gross income of the farm, by which is implied cash income derived from the sale of the farm products, making for charges on inventories. To be mathematically exact, the value of farm products used at home must also be accounted for: it is debited to costs and credited to receipts. This figure may often be divided by the number of hands on the farm to find out what is the per capita gross income, which may again be used for comparison among various farms. The *second* measure is the net farm income, or the difference between the money income and the money outgo of the farm business. The amount left with the farmer for subsistence, investment, expansion and saving is the net farm income. But this may not provide a common basis for comparison, although, theoretically speaking, this is a better index of the efficiency of the farmer-manager than any other measure. The *third* measure is the net business (farm) gains; this is the net income which is adjusted to the increase and decrease of stock and depreciation of the same: it is the net gain to the farmer (and his family) from the farm business. This measure informs the farm manager how much progress the business has made within a certain time-span, say a year. This is the commonly used measure of success in farming enterprises, for it relates itself to the dynamic aspects of this business. The *fourth* measure is the labour income, which should be more precisely described as the *labour and management* income of the farm operator. From the net farm income we allow firstly for the variations of sizes of various farms and the secondly for the imputed value of the labour used especially of the members of the family. What is then left is the net income to the farmer-operator for his labour and management. To arrive at an exact figure, we must deduct the rent (assessed at the usual rate) of the dwelling of the farmer from his income, computed in the above manner, and the interest charge on the investments that he makes. This is not a very practicable measure, though a correct computation. Difficulties arise in the computation of wages of unpaid members of the family; even though their grading may be done on a rational basis still they are not as fully occupied as hired labourers. The *fifth* measure is the rate of return on investment, which is the net income *less* an allowance for family labour and operator's labour, divided by the total value of total investment. It informs us about the earnings of management per unit of money of capital investment; this can be a realistic measure and also

quite comparable to other investments and enterprises. The *sixth* measure is the *farm family income*, which is a measure adopted on family farms. The *last* measure is the distribution of income measure which gives us an insight into the earnings of various agents of production employed on the farming business, separately.

Factors of Success Several are the factors which go to make for success in the business of farming. The common characteristics which are taken into consideration are the following: size of the farm business, its balance, the diversification aspect, crop yields, returns on investment, and other efficiency factors. Taking these factors one by one, first of all we take into consideration the size of the farms. It is not necessary that with larger size the farm income rises but the manager's effort is to arrive at the *optimum* size, which is the size best suited and the most remunerative for a certain type of farming, and able to absorb various factors of production and employ them efficiently. Farmer manager can find out the optimum by varying the size, if possible, and finding out variations of income accordingly, but the choice in this matter is rather limited, for he cannot very easily vary the size of farming unit as the businessman could, the size of the business unit. Regarding the *second* factor, we have to point out that *balancing of the enterprise is an important and essential determinant* of success in farming enterprises. In the above survey it was found that unless the enterprise was balanced, even from the purely managerial and organisational points of view its success and its prospects were meagre. Combination of various systems of farming may be necessitated with a view to balancing enterprises. But the long run and the short term effects of balancing on productivity of the farm are to be foreseen. Balancing, in this context, means the balancing of productive efforts in various directions and of the various investments in these directions, here the principle of substitution or *equi marginal productivity* needs to be applied, though with caution. The diversification aspect also needs to be considered, we have already noticed in our survey of the management problems and their application, how the diversified farms are more balanced and more stable in revenue and organisational aspects. The indices of crop and cattle yields are also an indication of the success or failure of farming enterprises, if the yield comparisons are made on the acreage and the yearly basis. The farmer could not very efficiently influence the annual and varying yields, for that depends on certain natural factors which are usually out of his control, but the success of the enterprise lies in his ability to control and conquer these very factors. The return on total investment is another factor of success, if return is high success is greater. Other efficiency factors are also to be taken stock of, in this context we need to make a distinction between the two terms, often used interchangeably, efficiency and capacity, before we could bring out the impact of these and other factors on the success in the farming enterprises. One thing

that may be noticed here is that we have taken the operating ratios : they are the efficiency co-efficients.

Efficiency and Capacity. As pointed out above, these terms are often used interchangeably. But the fact remains that they refer to different implications. Capacity is the power to receive and absorb, while efficiency is the ratio between input and output. Productivity is the resultant of both efficiency and capacity. This means that capacity relates to input, while efficiency to output, and productivity to total produce. Variations in capacity exist both in the land and the humans; some lands have greater capacity in regard to receiving powers of the investments made in them; similarly cattle also differ in their capacity as to the amount of feed which they can absorb with a view to giving the best and optimum results in respect of milk and other cattle products. The human beings differ in capacity in regard to the amount of land, labour and capital they are able to operate and manage efficiently. Capacity or the power to absorb is not related to the usefulness of a certain factor, unless we take this factor in conjunction with its efficiency and productivity. Efficiency is the output of a factor of production. This may also differ from factor to factor, and is the optimum in a certain set of combinations or in the most favourable combination and association. Productivity is the resultant of the twin factors of capacity and efficiency. In analysing productivity, we have to find out total output of the factors of production. The basis of the efficiency of management is to be measured by the efficiency and productivity of the enterprise that management undertakes. A better capacity of management to manage is the index of the efficiency of the enterprise measured by its productivity. In management studies, efficiency factors are used in terms of crop acres per man, per horse or per unit of equipment. But the usefulness of these measures must be restricted to crops with identically the same crops or the same enterprises. The *crop acre co-efficients* are a less correct index of success in mixed farms and diversified farming enterprises. These coefficients are not useful guides unless so refined and corrected as to take into account differences in the intensity of the application of factors, that means their capacity and efficiency. Other coefficients that are often taken into account, are *work* and *output* units, calculated per capita. These two coefficients are easy to compute and have the advantage of making an allowance for differing labour needs of different crops and cattle enterprises. But there is the danger of misapplication, too, for an undue increase in work units might mean crossing the optimum limit and reducing the farm income. Calculations might also be made on the basis of machinery and equipment used or on the basis of investment made in the farm business, but no such universal coefficients are in use as may be applicable in all cases. Caution must attend the use of coefficients; they are only the standard and index of good performance, and need to be adapted to the particular circumstances of each farm.

Scientific Management in Agriculture Scientific management, as commonly understood in industry, is practised with *five fold* aim, the reduction of wasteful motions and the saving of time lost thereby, the economy of human energy and reducing fatigue, designing and adapting machines, tools and other equipment to fit operation exactly, designing the workplace to enable the worker to operate with the least strain, and standardising materials and supplies to fit the machine and the operation. This means that scientific management is mostly aimed at what may be more aptly termed as 'work simplification'. But the scope of this type of scientific management and work simplification is much limited in the sphere of agriculture, for the simple reason that agricultural operations are of a special nature and differ from the industrial ones on several accounts and in many respects. Agriculture has relatively fewer repetitive tasks, except on the highly specialised farms, in agriculture a good deal of adaptability is called for. This makes the application of the above practice difficult. There is a wide range of jobs awaiting operators on farms, and these odd jobs require attention all the year round. Again, agriculture has relatively fewer operations that may be very conveniently split up into smaller tasks, as could permit of "division of labour", work requires to be done in completion and not in parts. Most farm operations are such that the machine, if employed, has to be hauled to the place of work, the tasks could not be brought to the *fixed* machines as happens in industries. Constant use of machines is not possible, machines are used only for small periods, not continuously. Most agricultural tasks are performed with large assortment of goods and tools and implements and not by one single machine. The amount of power required for farm operations is much smaller as compared with amount expended in industries. Also, the farm work does neither require a high speed nor a high degree of precision that expensive and precise machines may be installed. And, above all, farming is a small scale enterprise and can hardly afford the installation of costly mechanical things and apparatuses. Still work simplification has been introduced in select agricultural operations which have been mechanised, such as picking, milking some field operations, and a few heavy jobs. The management is concerned with the operational side of the agricultural enterprises. It must improve the work routine and bring good and more accessible portions to supplies and equipment. The other side of good farm management is about planning of agricultural operations, so that no time is lost by workers in moving from one job to another. Work simplification may also call for more supervision, and in fact be a substitute management for labour. In economic terms, the cost of extra supervision must not be higher than the saving in the wages paid to labour supervised, added to it is the fact that under too tight and close a supervision, the labourer may not remain responsible.

Planning the Farm Having surveyed the field of farm management it is now proper that we understand the essential considerations involved

in planning the farm. Farm planning has *two* closely related aspects: that of organisational problems and the other, lay-out of the fields and the farms. Both aspects are inseparably interlinked. The first was given a lot of attention in this chapter, and now we enunciate the main principles which may be followed in securing the best lay-out and planning of the farms. This type of planning may be called for by any one of the circumstances: soil depreciation from overcultivation or erosion (planning is with a view to soil conservation), the adoption of heavy machinery, shifts in demand of the farm products, and the introduction of new technique and most recent inventions in the sphere of farming, and out-of-date and bad planning and lay-out of farms. In actual practice, the planning of farms is not so rapid, nor responsive to changes in the outside factors, as may be theoretically imagined for farmers are a conservative lot who follow the traditional grooves of farm routine, and are slow at adopting the newer techniques necessitating this planning, or adapting themselves to the changing world. Even conscientious and advanced farmers would like to be sure that the change is going to be beneficial, for they do not want to disturb the modes they have been following so far. True, that the younger generation of the farming communities are more willing to make changes than the older conservative farmers. Planning may also be combined with effecting improvements in land, such as draining, or fencing; indeed planning may as well be occasioned by the same. Cropping systems are changed, and the effort is to change them without much alteration in livestock systems. New investments would tend to be made in view of calculations of the budgetary plans of the individual farmers. New construction, too, would be taken up only when the justifiable need for the same has been well established to the manager. Farm planning would also take account of very elementary and simple factors as the size and shape of fields. The shape of the farm and the location of the farmstead are significant from the viewpoint of time spent in getting to the farms, and the hauling distances. The ideal shape for the farm is regarded as the square one for the ease of the measurements to be taken and the records to be kept. Other considerations relate to the intensity of cultivation and the fertilizer and manure needs of different farms in respect of the crops they can grow. Any planning that would necessitate a major reorganisation before an expansion in output could be achieved, would not be undertaken for the simple reason that it may prove to be costly but not enduring. The farmer would figure out the expenses and receipts under various forms of alternative reorganisations, in order to decide wisely on the one most suited to his need. Land planning should be preceded by a soil survey, reporting on the needs of various schemes, and land classification to inform on the type of planning.

Records, Surveys and Accounts. Having grasped the essentials of farm planning; we shall now refer to records and surveys and accounts

which wise managers should do well to maintain. Taking *Surveys* first, we find them very useful to the manager and the farmer in arriving at certain conclusions and making correct decisions, which may be of an enduring nature. These surveys have become highly standardised and certain methods have been devised of undertaking them. A survey is a collection of the data on any farming subject. With this definition in our mind, we set out to underline the more important methods of farm surveys. The ROUTE METHOD is used in computing the unit costs of production. A surveyor is sent to a certain route and asked to collect data, and this method is considered as a general one to be preferred when accuracy of detail is needed. The CASE METHOD is designed to arrive at a full understanding of the special problems of a farm under analysis. Fullest possible details are explored and then the picture painted in true colours, this is a method of detailed analysis. And then are SAMPLE SURVEYS the method of sampling the farms, according to the changes that take place, and studying them in detail. It may be pointed out that no single method is good absolutely, but only so in its application, and provided we know what data are worth collecting and how analysed to obtain significant and useful results. Talking next of *Records*, we find that these may be kept of several aspects of enterprises. We refer to operating records, as financial records come within the province of "accounts," which we discuss next. Operating records cover a wide range of detail, depending on the efficiency of manager as also his capacity to maintain them. They include records of the farms and fields under cultivation (which are kept in the form of maps with sites, boundaries and acreages of the fields), the livestock records (which may give details regarding the growth and development of each head of cattle and its yield records *plus* the maintenance requirements of the same), the pasture records (which report on pasture feed production and productivity in general), labour records (which inform on capacity, efficiency and productivity of labour force these can be dispensed with by the family farmer) and other specialised records, (which may be necessary to have information on the special topics and special enterprises) and miscellaneous records. Regarding *accounts*, we may point out that these are inclusive of financial records, which give an account of farm and family transactions the contracts entered and the financial implications of the same. The cash receipt and the expenditure account also provide a basis for the successful planning and management of the farm. Inventory statements provide a clue to the stock in hand on the farm, while operating financial accounts give a balance sheet of the assets and liabilities on the farm. Account books may be helpful in maintaining accurate financial records and preparing correct accounts.

SUMMARY

The ground covered in this chapter is wide indeed. Starting from a definition of the management function, we switched on to

an understanding of the problems and questions which may confront a farm manager. We discovered that varied are the aspects of farm management, and of several facets the problem. Integration and prospectiveness are the twin considerations that characterise the business of the farm manager. Next were studied, at some length the ends of farming, though the major end in all farm enterprises is the maximisation of the farm income. There are several subsidiary ends, that we noted in this respect. Human objectives, among others, were found to be the most important, while also to be reconciled were conflicting claims of the group and the society. Management of farms was handled next; we studied in the *first* section, various types of organisations from the point of view of several combinations; and in the *second*, the problem from the specialisation viewpoint. A detailed survey was undertaken and some very significant principles brought to light. The principle of relative advantage, easily the most important, was applied to farm management. Next were examined various factors making for success in the business of farming; this subject was introduced with a view to discovering objective measures for attaining success in the farm enterprises. While discussing this topic, we had occasion to distinguish between *capacity*, *efficiency* and *productivity*, in their bearing on successful farming. Various other factors, such as planning, keeping of records and accounting, etc., were not lost sight of. This summary is not exhaustive, for the simple reason that the main points could hardly be isolated from the thread of the argument; still it is an enumeration of various issues tackled in this chapter. It may, however, be pointed out that the subject has a bearing on other issues raised elsewhere, because *farm management* covers a large ground with some of its conclusions useful for agricultural economics.

CONCLUSIONS

Some outstanding conclusions flow out of this analysis. In the *first* place, it must be conceded that the subject has close association with the body of agricultural economics, and may be studied not in isolation, but in conjunction with it. The principles of *pure* economics not to speak of *agricultural* economics, are time and again, applied to management of the farm. And it must also be admitted that a study of agricultural economics would remain incomplete without a formal acquaintance with the broad problems and issues of farm management. The *next* point that we establish, is that the variations of farming systems notwithstanding, there are general and universal principles that find application in the sphere of farm management; in this connection, the most important principle is that of *relative advantage*, applicable to all the various agricultural enterprises. Combination of enterprises is still another matter ensuring stability of income for the farm and durability of the enterprise, though that requires a more than usual awareness of the principles and practices of farm management than the average farmer does exhibit. That the integration of management

functions is desirable is another conclusion, in fact management of the farm is increasingly becoming a specialised task. It was also noted that manager has to look ahead and cannot afford to have a narrow range. Although all the ends of farming may not be realised by him, the more important ones (and this is decided by circumstances peculiar to a farm and its manager) must be immediately reached, while others may be left out or postponed, but this is not so simple as it looks, for most ends are integrated and inseparable. A judicious selection has to be made by a wise manager. There is the *time factor*, which assumes great importance in the agricultural sphere we discussed its relevance from various angles, still, it must be emphasised that this is one of the basic considerations in all types of farm management. One word more. These principles must be applied with caution, for it is almost impossible to find identically parallel cases, especially in the field of farming, these conclusions have first to be modified and then practised, at least in a majority of cases.

Critique of Farm Management To sum up, farm management is a distinct subject, though within the purview of farm economics. The analysis undertaken in this chapter is in terms of the farm as a whole. What we are concerned with is its *economic* aspect which relates to the economics of the *farm* as such, but here again we must be very clear in our mind for a farm is not a little different from a firm or a business unit. We have pointed out that the firm may undergo changes more frequently both in its structure and set up, and thus presents different problems of organisation and management, while a farm remains more or less the same or is slow to change. The one test of change (for sometimes changes may have been imperceptibly effected) is its impact on the net income of the farm, the most important end in farming. Above modes of analysis may be varied, but what must be borne in mind is that farm management analysis must be consistent in itself, and with economic analysis. And *lastly*, farm management, as such, has little value or utility, it must be studied within the wider perspectives of *Economics, Agricultural Economics*, and above all directed towards the welfare of the rural communities.

CHAPTER XIII

THE LOCATION OF AGRICULTURE

In Industry and Agriculture—Location and Localisation; Technique and Defence; Dispersal and Decentralisation; Balanced Location; Theory of Location—Classical Explanation: Andraes Predohl and Adam Smith; Von Thünen's The Principle of Comparative Advantage: The Modern Theory; Locational Planning: Application to Agriculture. Determinants of Agricultural Location—Relative and Comparative Advantages: Economic Profile: Geographical Pattern: Inter-Regional Competition: The Inference. Selecting a Farm—Real Estate and the Market: Regional Considerations: Natural Factors: Social Impact: Prices and Rents. Valuation of Farm Property—The Purpose: Evaluating Farms: The Pricing System: Appraisal and Assessment: Special Classes: Observations. Summary and Conclusions.

The survey of Farm Management has been extensive and instructive. The implied assumption was that the farm is well situated; we proceed to discuss the economics of situation, which, to say the least, determines the complexion of the enterprises, especially so in the sphere of agriculture, itself the resultant of natural and geographical factors. But this need not be taken to be the rule; for sometimes the prevailing pattern of farming may not accord with the economics of situation, as the *economic* factors may have registered a change, without the farmers having adapted their systems accordingly. Evidently, he who fits his farming pattern to his environments could make larger profits than the one who is "out of place." It is the purpose of this chapter to outline the factors responsible for the location of agriculture, so as to equip the student and the peasant to be able to judge if the farming pattern is suited to the environment he is working in. What particular lines of production have an advantage over others in the particular circumstances in a given region and on a certain farm is the substance of this chapter. Agriculture is more susceptible to changes of environs, natural and geographical, than other undertaking as it is dominated over by factors of geographical and natural import in view of the special circumstances attendant upon this pursuit; we have to be rather particular and precise about its location. Still another point is that the locale has an impact on the economy, as an agricultural location that fits in with landscape and environments, is less prone to fall a prey to the law of diminishing returns than the one which does not. This in itself is an important consideration, for the extra effort, which may have to be put in to nullify the operation of this law, could be diverted to the betterment of the rural community.

IN INDUSTRY AND AGRICULTURE

Before underlining the theories about the location of agriculture, we must distinguish between industry and agriculture, for the generally

accepted theories of location refer to the location of industry and not to agriculture. For industry location may not be of much import in view of the fact that Man controls it. It is possible to mould the internal organisation of its structure to the changing business. But in the sphere of agriculture, the control that Man exercises over natural (and unalterable) factors is very limited and rather ineffective. Hence, in the field of agriculture, (which is mainly an outdoor job) natural hazards count for much. An industry is run within the four walls of a factory, and therefore, less subject to the freaks of nature and atmospheric variations. This is not so in the realm of agriculture. Industrial advancement has proceeded so *rationaly* as to neutralise the environmental and natural bottlenecks, but the technique in agriculture is comparatively less advanced and the same type of control hardly possible. Another point, that needs to be stressed in this context, is the fact of industrial and factory organisation being far more elastic than the agricultural one. Agricultural structure is unresponsive to change and does not really adapt itself to the changing economic pattern. The conditions of supply in the sphere of industry are elastic, while those in the agricultural sector, rigid and inelastic. Thus it is that agricultural location, once fixed, has far reaching consequences of a permanent nature. While industrial location may not be so pertinent to the general economic point of view, agricultural location is rather significant for the national economy. Agriculture occupies a more expansive land area that does industry, in the case of wrong location and situation of farms, so much land is wasted, this is national loss. In industry, a misguided locale is not of such consequence. Another point is that agriculture provides raw materials to industries, hence a wrong and incorrect location of agricultural enterprises would have repercussions on industrial prices, which are, therefore, likely to be raised, to the detriment of the national economy. Again, it is from agriculture that man gets his food, in the light of this fact, if any misfitting factors enter these pursuits, they might precipitate a shortage of food and bring about a steep rise in food prices. The theory of industrial location, would also be viewed in its application to farm avocations, but with certain modifications, for in agriculture, (which is not a little different from industry) natural hazards are often invincible, if to these is also added the one of bad location. A greater amount of caution is needed in the selection of location for a farm, especially in the light of the above factors and in view of the fact that the agricultural produce is of a very perishable character and stands in need of speedy marketing, while rural means of transport are usually tardy.

Location and Localisation Before grasping the essentials of agricultural location, we should distinguish between *location* and *localisation*. While the former refers to the fact of geographical situation, the latter does only to the concentration of industry at one place. By localisation is meant the grouping of industries, or their clustering at one place. Localisation is born out of certain causes. The industries want to reap external economies. Economies of localisation arise

out of this clustering; these, in turn, arise out of better transport facilities and commercial amenities, which crop up because of this grouping. Localisation is, therefore, of importance in the realm of industry, and has been the rule for quite some time. It is only recently that the trend has been reversed and dispersal practised. There is localisation of agriculture in this particular sense, for the farms could not be *clustered* in this manner: they occupy a larger area and an expansive vastness of land. Hence localisation may not be a very pertinent issue in the agricultural sector. No doubt, localisation of farms could be talked in an extended sense of the term, but that would not be very relevant to the analysis in hand. Situational advantages could hardly be reaped by all farms in the same manner, as in industries, situated in one group at one place. The reason is that the situation of each field and farm is different from the other. Localisation and location would, in the special case of agriculture, not be materially different: at least that is so from the strictly agricultural point of view. This is not to deny that external economies do not accrue in a region where agricultural enterprises cluster, (When we talk of location of agriculture in this context, we talk of farms in a certain region and locale). And dispersed hamlets and farms and the vast and large fields could be described as having the same location; they could not be said to have been localised or grouped at one place. The point is that localisation of industry is of less importance than the location of agricultural production. Still another point, emphasizing the same fact, is that the recent trend, towards dispersal and decentralisation, has very much minimised the significance of localisation in theoretical analysis.

Technique and Defence. The two most important considerations, that determine the location of modern industry are *technique* and *defence*. In fact, the latter is a paramount consideration that might shape the economy of a country; it has been recognised as of utmost concern to the national economy. This fact has been stated because of its superior importance to both agriculture and industry. But the relative importance of the two is different. To agriculture is more important defence rather than technique. Agriculture responds more to strategic needs than to the changing pattern in technique. Not that agriculture is immune from the technical impact; only the response is very slow. The defence needs of a country, however, may influence agriculturists to change their methods and output accordingly; this is what was witnessed during the last war, when even the highly industrialised countries revived their agriculture in response to defence needs. Technical advances have a slower impact on the reorganisation of an agrarian system because of the factors noticed above, where we appreciated the limitations of the system of "scientific management" in its application to agriculture. In the sphere of industry, however, the impact of technique is more effective and rapid: technical advancements are adapted to industry much earlier than they are to agriculture.

On the whole, industry is more flexible than the agricultural set up. The point, that we need recognise, is that the agricultural structure is more responsive to the needs of defence, than to a changing technique. This point is significant in that defence has a special impact on agriculture from the angle of location, at least more than technique.

Dispersal and Decentralisation The trends now visible are dispersal and decentralisation of industry. In actual practice, the second tendency precedes the first. It was realised that the *decentralisation* or *delocalisation* of industry made it vulnerable to regional depressions, which paralysed its whole fabric in these effected areas. Again, from the angles of employment, it was discovered that employment opportunities could be multiplied with greater *delocalisation* of industry. Here we ought to distinguish between these two terms, often used interchangeably. *Delocalisation* refers to the de grouping of industries, or to the reversal of the trend towards localisation or clustering of industry. From the purely theoretical point of view, *decentralisation* means the dispersal of control over industry, which was vested in a few entrepreneurs and capitalists. It was felt that the concentration of control in few individuals tended to bring about increased exploitation of masses and consumers hence was initiated legislation for the decentralisation of industry. There has been centralisation of ownership in the sphere of agriculture, this has graver implications than the centralisation of industry. In industry, ownership could not be exclusive, for it was open to others to start industries and run them on competitive lines by means of joint stock (at least, this was a possibility, theoretically speaking) for there could be no end to fresh enterprises in the industrial field. But in agriculture, the situation is different, land, which is in one's possession, means so much land that others would not get, for it is fixed in total quantity. In the light of this fact, the centralisation of control and ownership means greater exploitation and injustice than implied in industry. That is why detailed legislation is usually enacted to abolish landlordism and *Zamindars* to split up bigger estates. Talking of dispersal, we should concede that this is the trend opposed to localisation. By it is meant a scattered rather than *concentrated* location. When an industry gets *dispersed*, it means that it is located at several places. The economy is benefited in point of employment and better utilisation of different resources located in several parts of the country. Dispersal and decentralisation are also trends visibly operative in agricultural economy. In nearly all economies, agriculture is now being decentralised, as noted above, in order that advantages be gained thereby. And agriculture is being dispersed to make the fullest use of *dispersed* natural resources, and to utilise various soils, climates and other kindred natural factors to the fullest. Incidentally, this results in more even and balanced location of agricultural enterprises.

Balanced Location The one aim of agricultural policy of an enlightened state should be to achieve *balanced* location as far as possible.

By *balanced* location is meant locating the enterprise as would balance the economy and benefit it. Industries and agriculture are both benefited by such a policy; employment may be on the increase, securing a better exploitation of resources, natural, physical and human. The goal of locational policy, therefore, is better and balanced location. This would avoid the clustering of industries : their dispersal would be brought about. With the advent of electricity, this is now possible both in agriculture and industry, for power can now be transported over long distances without any substantial increase in costs. Balanced location, in sooth, would also dispense with the creation of special areas where several industries need to be grouped. All this is easier to secure in the industrial sector, the location of *plants* is not so fixed and rigid as in farming for while in factories, machinery can be transplanted to another region (which may be more favourable from the point of view of location and the economy in general), agricultural farms could not be transported to another region; this is difficult to imagine. Hence, shifts in the matter of agricultural location are hardly possible, simply because the shifting of climatic and atmospheric conditions would be quite impossible; these conditions would remain so till agricultural technique advances to the extent of creating artificial conditions. Hence balanced location is rather difficult to achieve in the agrarian sector, (in the idealistically perfect sense); it may be easier to do so in the industrial sector. But in the matter of new agricultural lands, freshly brought under the plough, there could be more *balance* in location. In the case of the older and the established farms, pressure could be brought to bear on the manager-farmer to so renovate his farming operations as could accord with natural and physical environment that would be another aspect of balanced location. This is all that could be done.

THEORY OF LOCATION

The analysis, which follows, is based on the theory of industrial location. Observations were made about industry and generalisations made accordingly. Hence the bias in the theories of location is naturally industrial, especially when these have been evolved in the context of this theoretical apparatus. The most important exponent of a deductive theory of location is Alfred Weber, and his is regarded as a plausible explanation of the location of industry. This theory is detailed here and a critical assessment of the same is underlined below. Then we study the theory of comparative advantage, with its application to agriculture. And after this discussion, we give a succinct account of the modern theory of location (of industry) in the light of the agricultural conditions. This analysis is followed up by taking stock of the main considerations which determine the locational planning of industries in respect of various economies and different economic structures. And this section is rounded off with a critique of the theories of location in their application to agriculture. It may, however, be pointed out that this account of the various theories.

of location would avoid, and quite consciously, too, such details as may be irrelevant to the present discussion, *i.e.* the farm conditions and allied specialities. We need not go into the minutest details, unless the same assume an indispensable place in the argument and prove essential to the development of the same. In short, our account of the theory of location would be biased and prejudiced in favour of agriculture. Location is quite a composite matter and the resultant of several factors, not identically applicable to agriculture and industry, that alone necessitates a restatement of the theory of location, in discussions of agricultural economics.

Classical Explanation Foremost among the older thinkers is Alfred Weber, whose theory of location still commands some respect as a pioneer explanation of locational economics. His approach to the problem was in term of the variations of costs caused by regional differences. The two sets of *costs* that strike Weber as important are *labour costs* and *transport costs*, these influence the location of industry. An industry is located where transport costs are at the minimum for that gives it an advantage over others in respect of raw materials used in that industry. This in turn depends on the nature of the raw materials used in industry and the character of transformation, manufacturing or production processes. Transport costs have not to be interpreted in terms of weight alone, but also distance covered. In his view, every industry has a *locational figure* of least transport costs consisting of raw materials, supply centres and the consumption points. The place at which industry tends to be established is one which has advantages in respect of raw materials used in industry and the *transformation process*, *i.e.* the process of their manufacture. Raw materials have been divided for this purpose, by Weber, into two categories the *localised materials* (that are confined to particular region) and *ubiquities* or those materials which are found everywhere. It is only the localised materials that have an influence on the location of industry for these may not be available everywhere and at nearly the same cost. Further, location depends on the transformation process or the manner in which they behave in the process of manufacture. Some raw materials may lose their weight in the manufacturing process, while others may not undergo a similar change, they may retain their weight at the same level. The former would have their production located near the source of raw materials, as that would be more economical, other things being equal, while in the case of the latter it would not matter much, as other considerations would be weightier. On the basis of all these factors, the level of minimum transport costs would determine location of industry. *Deviations* from such a central site may occur either on the basis of economy in *labour costs* or on the basis of advantages of localisation of industry, *i.e.* *external economies*. The low costs of labour (especially in the labour intensive industries) have a very cogent influence on location, and it outweighs all other advantages if,

however, the migration costs of labour are rather low, the centre of industrial location chosen on the basis of transport costs will be retained and labour shifts to more advantageous centres. Such *deviations* depend on the importance of labour costs or the additions to value made by the manufacturing process. It would appear that the main determinant of location is the technique of production. This theory has been *criticised* on various grounds. *Firstly* it is pointed out that calculating transport costs in terms of weight and distance alone is not realistic : transport costs are not in terms of ton-miles, they also vary according to the nature of the product and the mode of transportation employed. Labour centres, too, are not fixed; new labour centres may spring up and only limited supplies of labour envisaged at any time or a centre. Assumptions with regard to *fixed* points of consumption are not valid, at least not in a competitive economy. And, the formulation of the theory in terms of technical co-efficients, instead of costs and prices, makes the treatment selective, and therefore, this analysis, of limited application. In the present context, it holds good only so far as technical factors are parallel in their relationship to economic factors. Nor is it applicable to agriculture as it unfolds the causes responsible only for industrial location, not agricultural. And then transportation costs, though relevant to agricultural raw materials, do not have any relation to the costs of agricultural factors of production. Land, the most important factor of production in agriculture, has no transport costs. Also, with reference to labour costs, nothing could be categorically stated in the matter of agricultural labour supplies. Weber's theory, which is not completely applicable even to the industrial sector, is totally inapplicable to the location of agricultural production. We must, therefore, look for an explanation, elsewhere.

Andraes Predohl and Adam Smith. According to the former, location is a variation of the law of substitution. Every change in the location of industry involves a change in the combination of the factors of production. This theory offers an explanation for shifts in industrial location, and also accounts for the location of older industries as between themselves. Still, the theory fails to explain the location of new industries. The theory is inapplicable to conditions in agriculture, except in a very general manner. A vague explanation of the comparative benefits accruing from a certain combination of the means of production is given. Another theory of location, pronounced by Adam Smith, regards the distribution (geographical) of industries as one of the variants of the division of labour. Under the free-play of self-interest (on which Adam Smith's analysis is based), it was expected that optimum distribution of industry, as between different stations, would inevitably take place. Division of labour arises from differences in ability, which might be considered as equivalent to comparative advantages. Comparative advantage reflects itself in the cheapening of production or in lower production costs. Implicitly, the theory assumes that the doctrine of comparative costs, explains both the pattern

of international trade and industrial location. But it is a vague and general explanation of locational economics and is incomplete for our purpose. Comparative costs, as redefined by moderns, may now be analysed. Suffice to note here that Adam Smith's explanation is rather static and unable to account for modern industrial location. All advantages need not be natural (as the theory assumes them to be): they may also be *acquired*. Acquired advantages exert a stronger pull on industrial location and keep the industry tied to a place where natural advantages may no longer be operative. This explains what is known as 'industrial inertia'. In agriculture, too, the theory offers only a partial explanation, for agricultural location is determined mainly by facts not enumerated above. Without anticipating arguments below, it may be said that agriculture suffers from "industrial inertia". Agricultural location may be influenced by comparative advantages for climate and custom are potent forces in the rural sector. Another factor, distinctly operative in agriculture, is the relative immobility of labour, for the peasants are usually chary of moving from one place to another. The classical explanation, now outmoded by modern analytical approach, is only a partial one. Adam Smith's theory depends on natural selection by the process of *laissez faire*, taken by him as the characteristic of a competitive society, but both these premises appear incorrect and untenable for modern agriculture. Transport costs, labour location, natural advantages and comparative costs are all partial explanations which assume that the particular industry could easily change its locational character: this is not true of agriculture. Regarding industrial location, the issue of labour location and transport and comparative costs may be relevant, but not to agricultural location. Classical economists seem to be more concerned with *natural* factors rather than with the analytical ones, also they attended more to the static rather than dynamic forces and factors.

Von Thunen's Theory In his book, *The Ideal State* Von Thunen expounded a theory of the location of agricultural pursuits. His analysis is directed more to location in respect of markets. He related bulk and perishability to the cost of transportation of different products to explain how agriculture shapes itself in response to economic conditions. He took the example of a city located in the midst of a fruitful plain: this example was selected for the sake of eliminating complicating factors. His assumptions are *firstly*, the plain has uniform soil and climatic conditions, and *secondly*, that all transport is by means of wagons plying on a road of uniform quality. No navigable river or canal runs through this plain. His *third* assumption is that the uncultivated waste separates the city and the surrounding plain from the outside world. With these assumptions, he contends that the types of farming tend to be distributed in such a manner as may establish an inverse relationship between the cost of transportation of the crop per acre and the distance from the city of the land on which that crop is raised: the longer the distance, the higher the price and costlier the

crop. Concentric circles could be theoretically drawn round the city about which various crops are grown. Such products would tend to be located (and raised) as have bulk and weight, only in that vicinity. Their transport costs to the city would be only so high as to prevent their production in a distant region. This holds good of perishable products for these must be consumed while fresh. The theory propounded by Von Thunen recognised *distance* rather than other factors as determining agricultural location. This can be observed to operate when one rides out from a large city into the country. Vegetable and fruit gardens are situated just outside the city, while next are the areas intermixed with gardens and dairy farms while, beyond, are areas producing articles required for general consumption. Particular commodities are produced depending on the location of the city and the demand arising therefrom. So far so good; Von Thunen's theory does apply in a general way, but its defect is that it does not account for several other factors, equally responsible for determining farming types in the city's vicinity. For instance, a transportation system may also influence location. A farm may be situated away from the city but on the main railway line; this would be quite a productive proposition. Again many different factors, of physical and biological nature, also influence and limit the areas available for the production of certain crops. These facts Von Thunen did not take into account: he unfortunately ignored these important considerations.

The Principle of Comparative Advantage. Having grasped the essentials of the theory put forward by Von Thunen and found it inadequate to explain the location of modern agriculture, we switch on to explanations couched in terms of comparative advantage. Broadly speaking, the factors that determine advantages in respect of crops or livestock could be classified as physical, biological and economic. Dominant physical factors include climate, topography and soil. Differences in these set limits not only to crops grown but also to other forms of agricultural enterprises. Differences in climate are highly local, while soils differ as much as does climate from place to place. Local variations are more important with soils than with climate. Economic factors, in the locale of production, tend to determine a pattern different from the physical one. Prices tend to be related to markets, consuming centres, transportation costs, labour supply, skill and wages, the density and the character of the population, the location of industry, interest rates and availability of credit, the types of credit institutions. Also the economic conditions and opportunities of individual farmers, *e.g.* family labour available, off-farm employment, peasant's ability and willingness to borrow money as also his credit-worthiness are more absolute determinants than market and price factors. Biological factors also bear upon the locale of agriculture; this point need not be explained at great length, for it is evident how these forces influence the growth of crops in a certain region and the

breed of cattle raised there. Agriculture is moulded accordingly. The resultant of all these is the shaping out of agricultural pattern in a community. Economic and other factors operate together. In diversified agriculture, an equally important factor is production, supplementary, complementary and joint. None of the factors, however, influences location in a stable manner, for these factors are themselves of a dynamic nature. Economic factors are less stable than others though they are important determinants in a rational system of agriculture. This is the *comparative advantage*, the one resultant of all the above mentioned forces. The general effect of mechanical inventions has been to increase comparative advantage, especially in certain areas. In spite of the economic and biological changes, (in operation for quite some time) general features of the farming systems have remained the same, for modern peasantry is shaped by many generations of farm experience by adapting cultivation to the general economy. Farmers believe that theirs is the best method of utilization of their resources. This is in addition to comparative advantages, that is *agricultural inertia*.

The Modern Theory This explanation is in terms of optimum allocation of resources. This optimum allocation having been made from the view point of the individual, is not coterminous with maximum economic welfare as some indirect costs do not matter much in individual calculations, say excessive unhygienic conditions consequential to the setting up of a certain industry, or heavier unemployment resulting in the introduction of newer technical methods of production in some other industries. The cost of this unemployment has to be set against the gains in the cheapness of materials produced. Location is determined in a free and unrestricted economy according to optimum allocation in the individual's way of thinking. It is his calculations that matter. Other relevant considerations, e.g. technology and defence, have already been adverted to above. The modern theory breaks away from the classical explanation, couched in terms of comparative advantages. The relative character of these and other dynamic changes is recognised. New technological changes have made raw materials and power resources very much *ubiquitous*, hence, in the light of these considerations, the dispersal of location is now a possibility. This is reinforced by strategic needs, which make dispersal necessary. Employment plans, too, make for dispersal of location. The state can also play an effective role in correcting defects in locational planning by such policies as aim at bringing about an optimum allocation, regarded as the test of a balanced location. There should be optimum allocation of economic welfare between regions by equating *social marginal net product*. The theory, as such could hardly be applied to its raw form for it is primarily an explanation of industrial location. It is in terms of optimum allocation of resources, and in the light of the state policies of economic welfare, that locational factors and determinants do have an important bearing on the amount of economic well being attained. The theory takes stock of such factors, as dynamic technique (which has rendered raw mate-

rials and power resources rather ubiquitous) and the strategic requirements (as make it imperative for locational dispersal to be undertaken) and the state policy which may correct unbalance in the sphere of location. And the final test is the securing of maximum welfare by equalising social-marginal net products: this covers all various aspects of location to secure equality in marginal net product from regional and social angles. This provides us with a clue to the place planning has in sphere of location. It is only after analysing locational planning could we set out to apply these "tools" to agriculture in particular.

Locational Planning. After this outline of the essentials of the theory of location, as understood in terms of equalising the marginal social net product, we set out to assess the fundamentals of locational planning. This modern explanation points the way to locational planning by suggesting that this should be affected in such a manner as to equalise net product on the margin in the different sectors of the society from all viewpoints. Elucidating further, we discover that by *net product* is meant what accrues after deducting the overhead charges. It is meant roughly taken as *net assets*. What a certain plant or farm is able to earn in a time-span, after meeting all charges is its *net product*. Marginal product is the amount added to the total revenue by the marginal unit; *gross* marginal product is the total amount added to production by such units. *Net* marginal product would, therefore, be gross marginal product *minus* all other additional costs. Now this *net* product is to be assessed from the social angle. In all the different sectors, this net marginal product, (which accrues to society and not merely to an individual) has to be equalised. This is the key to locational planning. (The term "sectors" refers not only to different regions, but also different cross-sections of the social make-up). This stresses the fact that society must also benefit from locational planning, as also different regions. An uphill task, it is difficult in view of several conflicting considerations, and rapid changes common to modern economy. Undergoing a change are also priorities in the social set-up which may make it difficult to achieve locational balance. In sooth, it becomes a function of the state to undertake locational planning and to settle priorities in this field. Roughly speaking, locational planning would be the ideal which benefits all cross sections and regions equally. And this holds true of agriculture, as it does of industry.

Application to Agriculture. The above conclusions should be applied to the agricultural sector rather carefully, for what holds good for the industrial sector, may not apply to agriculture. The above premises of locational planning do hold good, but only generally speaking. Still, it may be pointed out that the planning of agricultural location is a tough task, for it is not an easy job to alter (the already fixed) location of farms and fields. And it is not possible to locate these fields and farms in new places, decided upon by the state in view of the above formula. Hence, agricultural location may not conform to the principles enunciat-

ed above. Undoubtedly, agriculture is a part and parcel of the general economy, but it has characteristics of its own, quite distinct from those of the other sectors of the economy. Modern theory is hardly applicable to agriculture, as the equalisation of the social marginal net product may be difficult to achieve in this sector. It is a fact, however, that the planning of industries and agriculture could be effected, so as to conform to this principle by other methods. Given the location of agriculture, what may be done is that locational planning of the other sectors of the economy could proceed in such a fashion that the goal of equalising social marginal net product be realised by bringing about alterations and changes in the locale of other economic activities. This means that other industries (using the term in an extended sense) may have to be adjusted to the location of agriculture. Or the state could bring about changes in the sphere of agricultural location by stringent means, not usually undertaken by democratic and free states except by restricting individual freedom. Hence locational planning is conspicuous by its near absence in agriculture.

DETERMINANTS OF AGRICULTURAL LOCATION

It so appears that this question is explicable only in terms of certain determinants, and not as an isolated model. Several contributory factors and forces are acting in concert to determine the location of agricultural enterprises. And in this section do we notice those factors and forces and observe their impact in details. In the first instance, attention needs to be focussed on the relative and comparative advantages, which alone are unable to explain the locale of agriculture. Next is taken into consideration the economic "profile" of the country in question. This is only a descriptive concept. Then would be examined the geographical pattern of location for natural factors are very important determinants of this type of locale. Inter regional competition must also be analysed in order to see how far it goes to influence the pattern of location in respect of farms. Towards the end of this section we infer about the more relevant determinants of locational economies. Still, the observation that agricultural location is not solely determined by economic factors is not out of place. As pointed out above, geographical, biological and natural factors act in concert. And above all, the institutional forces, too have their say in the matter for the location of the farms is more a matter of habit and traditions, current in the region (in which these are located) rather than mere calculations, supposed to be made by the simple and non calculating farmers.

Relative and Comparative Advantages. It is not the comparative advantages alone that determine the location of agricultural enterprises, but relative advantages as well, that settle their locale. These relationships boil down to the statement that a good tends to be produced in those regions where its ratio of the total advantages as compared to other regions, is higher, or (putting the same thing in other words) its disadvantages are lower, comparatively. It is not only the crops and their

yields that determine in what areas to locate them but it is their yields as compared to yields in other areas and the impact of other factors, that are responsible for the location of agriculture. In the light of the above contentions, we may generalise that the relative and comparative advantages, together, determine the location of crops. This calculation may involve a two-way comparison, between areas and between different agricultural enterprises in the same area. That enterprise will tend to be favoured for selection in an area, as has the best comparative *and* relative advantages, as against other enterprises, that combination of enterprises would be considered most remunerative, for the purposes of agriculture, that has *optimum* relative and comparative advantages. And then *optimum* location, in respect of agricultural enterprises, would be characterised by best comparative and relative advantages; location is taken as granted for the purposes of this analysis. Certain crops are best suited to certain localities, and tend to be grown in those regions. Same could be said about the location of enterprises. We shall have to bear various factors in mind, when deciding upon the location of agricultural production: we must assure that soil and other natural conditions fit in with the type of enterprise that we take up. Secondly, we observe that the next determining factor is the *relative* advantage that an enterprise possesses over another one in that region, before we could be sure of its suitability there. Again, we must also find out that the proposed combination of production fits in with the entire economic structure of the country. This is the application of this twin principle. Relative advantages are with respect to relative merits and demerits of different crops or enterprises with regard to their suitability of location; while comparative advantages are with respect to the comparative and competitive areas available for cultivation. It is the resultant of these twin forces that provide a clue to the locale of these enterprises. This is how to decide upon the suitability of a selected location with regard to the general economic structure of the country. Thus is maximised the social-economic welfare of the nation, by locational planning.

Economic Profile. After a theoretical account of the various determinants of the location of agricultural enterprises, we examine the concept, "economic profile." Russian economists must be credited with this contribution to locational economics. An ideal production centre may be one from where concentric circles be drawn outward according to variations of costs and prices. In the centre of these circles, prices may correspond to the (theoretical) ones, determined by the interplay of the forces of locational equilibrium, while as economic activity expands outward and "industries" begin to be located in the outer circles, prices (and incidentally costs) begin to rise. Thus the cost-price zones are marked off from the centrally ideal location and the location map drawn up accordingly. Only products with the highest margin of profits tend to be produced in the outermost circles. Thus cost-price circles correspond to production zones. In

the immediate neighbourhood of the central zone, are likely to be produced those commodities that are highly perishable, and therefore, marketable only at high cost, while in the outer zones would be located the production of standardised and rather *durable* articles. Thus for example, in the immediate suburbs of city, may be grown vegetables and fruits, while beyond may be situated milk and dairy farms, and farther away other farms in this order *firstly* those processing farm products and *next* those producing standardised products. Thus we infer that the economic profile may be determined by various factors e.g. perishability, value, processing, conversion and standardisation of the produce. In the case of perishables, the production centre is likely to be near the city or an ideal locational site. Value refers to revenue from produce and this factor is reckoned with only after perishable articles have been disposed off. Articles, having high value in small bulk, may be produced in the next zone. In the *third* zone are farms growing those commodities that may, by their getting converted or processed gain in value while losing in weight, because that would be a distinct advantage from transport and storage viewpoints. In the *fourth* zone may be produced standardised things as have sure marketability and do not raise special problems with respect to storage. Thus far would be commercial farming zones. In the last (or *fifth*) zone, one may come across farming for the needs of the family and its subsistence. In this manner is determined the general *economic profile* of the region with respect to its agriculture.

Geographical Pattern Having assessed various factors touching upon the economic profile of the country with special reference to agricultural production, we now turn our attention to the locational pattern as dictated by geographical factors. Farm prices decline outward from markets and centres of demand and disposal. This fact needs no explaining. But one fact that may be recognised is that the total costs also decline along with prices, for the simple reason that they are (looked at from another angle) only costs of production. Also while haulage charges, in the outer zones, may rise, costs decline in the central zone, that is why production is more profitable in the central zone than in the outskirts, and in the outer zones. The costs that may tend to decline in the remoter regions relate to haulage, rents and land. Near the centre, haulage charges are almost nil, while rents usually high and so also land values. Other costs may also be affected as cultivation advances outward, labour costs may be lower in the near central location and higher as it expands outward that is why labour is substituted by capital goods and machinery in the outer zones. In *mature* economies, where the pressure of population is not so heavy, farming tends to be *labour intensive* near cities, and *capital intensive* away from them. But in the backward economies, where demographic pressures are burdensome in rural regions, the former type of farming may prevail, for labour costs may not be heavy in the outer zones. Some of these differences remain

concealed or are offset by variations in the quality of land, its high yield, or better natural resources in point of topography, and slope, etc. Therefore, we find that from the angle of geography, too, there is a set pattern of costs affecting location of agricultural enterprises. The more remunerative ones are those that fit in with the geographical pattern and these are located near the centre, while those that have been able to neutralise these disadvantages of distant location may be centred in the more distant circles. Possibly, changes in the economic structure may have come about, meanwhile, thus nullifying this argument and making it inexplicable why a certain enterprise is located where it is. Evolutionary causes may have brought about a change in the relative and the comparative advantages, but agricultural ventures (static as they are) may neither shift the place nor change the nature of the enterprise. New products in agriculture may upset all their calculations and initiate new forces which were then absent, or were so far weak in their operation. It needs to be stressed that even the geographical pattern may undergo a change or alter, when the theoretical basis of location shifts though the process of agricultural dynamism is much slower than its economic counterpart. Still it has its significance in this analysis.

Inter-regional Competition. Different areas supplying certain goods are styled as competitive regions. These are potential contributors to the supply of a product for a consuming centre (markets) and are in competition for the same end, the market being supplied by each one of them. The quantity consumed is thus apportioned among these competing areas according to the advantage accruing to these products there. Farmers, dealers, and merchants, all of them, are aware of competition between regions, their products and their relative advantages and disadvantages, too. For a complete and comprehensive study of inter-regional competition, we need a demand curve showing quantities of the product that the market is ready to take off at various prices. Only then would it be possible to say with precision how competing areas would share the market at different prices and amounts of the produce sold. This is typical of the general equilibrium analysis. It needs to be pointed out that this inter-regional competition would be reflected in the location of crops and agricultural enterprises; intense demand tends to be located in regions associated with them. For example, if a certain product has long been associated with a certain place, e.g. Nagpur oranges, that would continue to be produced in that very region, for that region's share out of total demand is rather fixed, by centuries of traditional usage and set habits, irrespective of economic considerations. This may be described as its *qualitative* aspect; the product is known for its quality (imaginary or real) of the articles which are sold for their association. Inter-regional competition thus reduces itself to the creation of monopolies in respect of production of agricultural stuff. Demand is thus a determinant of agricultural location; when an article is assured of the demand it sticks to its location and its production centre need not shift. This is about the

commercial produce, i.e. those disposable in the market. As regards subsistence and family farming, market demand has little influence and the locale is decided upon by those factors. Still, it is important to note that the nature and character of agricultural production is determined by such factors, as are found remunerative in a certain region producing certain articles from the market point of view. If so production persists, otherwise it is discontinued in that region.

The Inference It is clear from the above discussion that the question of agricultural location is rather complicated. It is the resultant of several conflicting forces and not due to the operation of an isolated factor. The locale is decided upon by comparative and relative advantages and also by economic profile which determines, the nature of crops and other enterprises undertaken in different regions. The costs of production are also influenced substantially, by the facts of geography. *Nature* has an important bearing on costs, both absolutely in respect of each enterprise and in regard to comparative costs as between different crops. Nature also decides which crops are cultivation worthy in the selected areas. Location in agriculture is considerably shaped by inter-regional competition, the share of each region in the market and the remunerativeness of the enterprise from that point of view. That will go to stabilise the enterprise in that particular region. Thus we have before us several sets of causes responsible for the location of agricultural enterprises. The law of comparative advantage only vaguely gives general principles according to which entrepreneurial locale (including the rural one) is determined, still the more detailed questions may not be covered by this generalisation. It is only when we combine the comparative advantages with the relative ones, that clearer perception begins to dawn upon us. Economic profile brings us nearer to actual situation prevailing in regard to the locale of these ventures, and provides us with a clue as to what crops and enterprises be located at what places. An examination of this question from the view point of geography reveals to us the nature of comparative costs and this also introduces some complications in the problem though making it more realistic in its approach. It is an understanding of the factors attendant upon the demand schedule of the articles produced in different farms that we discover causes responsible for continued and persistent cultivation as also various crops and enterprises in the selected areas, other than those precipitated by these factors. In short, the above analysis, light bearing as it appears to be, could at best be credited with offering a plausible explanation of location and also serve as a pointer to the planning and planning of fresh and nascent farm ventures. But it could hardly be depended upon for a precise and fool proof determination of farm location, because of the fact that the main trends only have been unravelled and not particular local causes, miscellaneous other forces of non economic character also operate, and with equal vehemence.

SELECTING A FARM

Having enunciated the laws that govern the location of agricultural enterprises, we venture to tackle the guiding principles that may be kept in view when selecting a farm. The problem of location would remain incomplete without a reference to this. The tacit assumption above was that the farmer had already a farm and he dealt with the problem of selecting the enterprise, or crop. An understanding of the problems of selecting a farm would provide us with a practical basis for a complete theory of location as applied to the agricultural sector. The questions that he would have to face relate to the types of farming sought to be undertaken. *Secondly*, he must decide upon the region where to conduct his farming business, the question of locating his enterprise. In the *third* place he would have to select the area, the community or a section of the same, that he prefers to any other. The locational issue is settled with respect to markets, cities and the means of transport and communication. He should also visualise, in advance, the size of the farm, for a certain size that he thinks to be the *optimum* may not be possible in a certain community or a certain centre. What combinations are selected by him as regards suitability of farming apparatus and equipment that he already possesses and his aptitudes (and those of his family) are to be judged in respect of remunerativeness. Natural factors (of good cultivation) that suit his farm; e.g. topography, soils, and slope, would have to be taken into account by him. Water supply, the most conclusive consideration, in the case of irrigated farms, is another additional point reckoned. Social factors, e.g. amenities of life and social environments, may also be looked into by farmers as by all humans. And, above all, stand relationships that all these considerations bear to prices obtained, and the remunerativeness of the enterprise, for without this promise, none need bother himself about selecting a farm, nor even discuss all these above details. We propose to analyse certain important factors that otherwise may have escaped notice but are of significance, in the selection of a farm. A study of these factors is prefaced by a descriptive survey of the real estate market for land; this would make us well equipped for the analysis of more important issues (e.g. regional and natural ones), in the light of the social impact of prices and rents.

Real Estate and the Market. There is a real estate farm market, although this market is different from the ordinary bazaar or *Mandi* that one comes across. The major point of difference is that this market is not well organised, which, in other words, means that it is not a perfect market. A "perfect market" is one in which everyone has all relevant information and is well equipped for various transactions, being possessed with complete knowledge of market condition. In this market, one single price prevails for the same type of articles and commodities, at the same time. It is possible that the commodities may differ in quality and other characteristics, but these differences are appreciated

by everybody, and consequently, reflected in the prices at which these are sold. *Different* prices represent *different* grades of *different* commodities. And then, one buyer more or one less, does not make any material difference to the supply situation. Transactions may be effected in different places, but this fact does not make any material difference to the argument for the underlying assumption is that these transactions are within the knowledge of interested people so that the same grade of the commodity sells at the same price in the regions or places, allowing for transport costs. In an examination of the working of the real estate market for the purchase and sale of farms, we must concede at the outset that this market is far from perfect, buyers and sellers have imperfect knowledge of differences in the quality of farms that they intend dealing in, since there is no accepted system of grading nor could a perfect system of grading be evolved. Also the peasants, ignorant and uneducated as they generally happen to be, are not aware of transactions taking place and prices being settled. Farms are, therefore sold at prices, higher or lower, than the *correct* prices. Account is also taken of differences in productivity, situation, location, natural endowments and residential advantages. We must also notice the fact that in all transactions and price fixation, there are *excluded* buyers and sellers, who may not be willing to buy or sell at the prevailing prices. Thus a number of buyers and sellers (potential indeed) are excluded from various transactions taking place. But these *excluded* categories also influence price settlement for these people also bid though differently, and their influence (remote and indirect) is still felt in the real estate market. Again personal factors must not be lost sight of, for the more efficient farmers tend to outbid the less capable ones as they can reap fuller advantages. Prices are the result not of the forces of demand and supply alone.

Regional Considerations Usually, a farm is selected in regions which farmers know best. But other considerations need not be lost sight of. Before selecting a farm, he decides upon the scale of farming that he would practise, for this would determine location, where he should farm. Some farms are large scale while in certain regions, the typical scale may be the small scale, as for instance, in the hilly regions. And in the selection of the region, the farmers need also take into account "other opportunities," possible in that region. In case he wants some extra employment in the off season, he would prefer to settle down near cities, or industrial towns, but all this depends upon his aptitudes. Account would also be taken of new lands that may be brought under the plough as a result of the extension of irrigation facilities, drainage measures and flood control projects, etc., and to the farmer these lands may provide better opportunities than lands in established communities would, where farming is centuries, old. He may take to *settler* farming. He would also like to calculate, in view of his aptitudes, training and resources, if he could exploit opportunities in the unreclaimed lands, or farm in those regions which involve a lot of initial expenses in making the land arable and bring it under the plough.

Lands may also be selected near the centre of industrial and commercial activity (if their prices are not prohibitive) but another consideration is the prices or the rents that he may have to pay. Only such enterprises are undertaken as would prove remunerative. These farms would lie in the second concentric circles (as explained above) from the central location. Certain lands may be *specific* types, and may admit of only specific cultivation, only those farmers who are equipped with that specialised training in the technique of specific farming would be able to take to these ventures. Sometimes, there come about shifts in cultivation pattern in these regions, with the result that the farmer may only find himself out of place. He weighs potential factors likely to influence and shape his farming of tomorrow, especially in the region where he proposes to farm. Also must he modify the prevailing pattern and system of farming that he is following till now; this may have to be done in view of changing circumstances, operating in that region. And then, the farmer selects a farm in keeping with the pattern familiar to him; this may necessitate shifting or transferring to another area. Or it may so happen that because of certain economic forces as may operate within his own farming unit, he may find it necessary to resort to more intensive cultivation, than is common in that particular area.

Natural Factors. Among the natural factors, the most important are topography, soils and climate. Regarding soil it may be emphasized that it should suit crops proposed to be cultivated. Also it should be well drained. In fact, while these possibilities (of making the soil suit the crop) are rather remote, the greater probability is that the soil, such as could, after some little adjustment, suit operations proposed to be undertaken on it. Hence the best land from this (practical) angle would be the one selected for cultivation. If poor lands are used, more would have to be acquired; hence qualitative differences in land would, after some time, become quantitative; some soils are so specific that only certain select crops could be raised and a few enterprises undertaken. Hence, the soil may be surveyed even before its final purchase. Probably, a soil survey may be a difficult task; the survey already conducted may be made use of. In this regard, one should have an idea of the soil geography and find out if it is well situated for certain operations and enterprises, for a correct location is a prerequisite to their being undertaken. Hence, information regarding soil types is essential before a final deal could be struck. No doubt, good management could make up for difference in soil; still, too much reliance could hardly be placed on the manager making up for deficiencies of an agricultural character. Location, size, and contour of land are factors of importance. Regarding topography of land, the prospective farmer would ensure that its slope is what may be desired and its *site* suitable. No doubt, topography could be improved upon but within definite limits; and the manager needs to be conscious of his ability to improve matters. Improvement would of necessity take some time and mean some expense to him. And the last factor is, climate; this is unalterable and one that the peasant

could hardly improve upon. The place that he selects, is located in a known climatic region. In this regard, personal examination on the spot, may be dispensed with and reliance placed on well known facts of geography. A farm may be so situated that it gets less of the benefits of sunshine and more of winds and storms. Therefore, caution needs to be exercised in this matter. It should also be borne in mind that we refer to the unit of agriculture and not total land in a certain region, hence attention should be focussed on the locational aspect of particular plot and not the whole land in that region, where the farmer proposes to set up. Certain farms must be located near the means of transport in order that the problems of marketing may not much bother the peasant, this is another natural locational factor.

Social Impact. A farmer, who sets out to select a farm for himself and his family, has also to reckon the social side of farming, man being a social animal. In an environment, not socially congenial, a peasant may, later on, have to give it up for the simple reason that it does not suit the family. This is an important consideration. The most important social factor is whether the farm is near the cities, centres of industrial activity, schools or places of communal congregation, or of social gatherings. Next is the location of residential buildings, and for this matter temperaments count for much, for it may be that some peasants may elect to settle in highly congested environs, while others in solitary hamlets. For the former, the compact type of village life would suit, and the latter would be more at home in a scattered locale. And then, the most important fact, from the economic point of view, is the one of prospectiveness. All these things must be calculated if the farm is situated in a region which is declining or improving in the prospects of farming, in a locality with declining economic and agricultural opportunities, there may be little use having a farm. This calls for a special appraisal and foresight on the part of the farm manager. Among other social factors demographic structure in the region, *vis à vis*, other regions, also counts for much. Where population is sparse, the chance of getting labourers in the busy season may be remote, while in areas and regions, where its pressure is heavy, it is fraught with dire consequences, noted in an earlier chapter. He should ensure that the demographic structure is in accord with farm requirements, and that both these balance each other. In regard to family farming, this requirement may not be so essential though it could still not be dispensed with entirely for farm labour may be too meagre to cope with increased work at certain times, such as the harvesting season. A religious background, though not so important in an urban settlement, is very pertinent to a rural society, for peasants may be habituated to a certain mode of religious observances and ceremonies, and find themselves out of place in an alien environment. Social background may not be regarded as "proper", if it is "conservative". In this case, the farmer and his family are likely to sink into the sloughs of further social deterioration, this should be avoided for the aim of agriculture, from the social viewpoint,

should be to progress the society. In short, it must be conceded that social factors and forces are of paramount importance to the peasant, the society, and above all, agriculture itself.

Prices and Rents. These factors are economic, and in the context of this argument, the most important. Prices must be such that the farmer is able to pay, without going into debts unduly, while if he has to rent the farms, the rents must be only so high as to enable him to make it remunerative for himself and his family. To arrive at the correct price he should pay, *two* procedures could be followed; *firstly*, he could compare the price of the farm in question with the prices of other farms similarly situated. *Secondly*, he could estimate and capitalize on the basis of *net* farm incomes. The former would be the market value of the farm, while the second would give him an idea of the net income expected. In actual practice, there would be wide disparities in prices obtained by the two methods; and the farmer would be advised well enough to adopt more scientific procedures. Another procedure is to work out a plan of operation on the farm and on this basis, to estimate the net income from all these operations separately, not on the basis of past incomes but prospective estimates. From this may be deducted the computed income and wages of his own labour and of the members of his family, likely to assist him on his farm. This net income may then be capitalised at the rate at which moneys could be secured on mortgages in that particular region: this would be a scientific method of finding out the price that the farmer could pay for a plot of land, he intends to purchase. Still another method is to estimate landlord's net assets, (in the language of the Indian revenue practices,) according to the share-lease system, and capitalise the same in the manner outlined above. This process is a rough and ready method of pricing land. Another method is to deduct essential living expenses of the family (in the case of family farms) from gross income and capitalise the same. Those results may be identical, and give a fair guidance to a prospective farmer in the matter of prices to be paid. In renting a farm, the point that needs to be taken into account is the time-span: farm incomes and receipts could now be worked out on a more definite basis. Another important point is that rent payment is more or less on a customary and contractual basis and the farmer should be aware of the prevailing customs and contracts. He should also remember that choosing a farm is as important as choosing a landlord: a good landlord is an asset. Rent should allow for the remunerativeness of the enterprise, for excessively high rents may only result in self-exploitation. In fact low rent should be paid by a beginner, for he may be regarded as serving a period of apprenticeship. Still, the locale is important.

VALUATION OF FARM PROPERTY

Though we shall have occasion later to thrash this subject at greater length, we must notice here some salient points, relevant from the locational point of view. Valuation is a very complex procedure

and requires some special calculations by an expert, but the main principles, underlined, are not very complicated. Farm property is valued in opening and closing inventories and in estimating changes in their net worth. The calculated net income for the year may be materially influenced by value assigned to a particular asset. Also in settling the estates farm property needs to be evaluated. Appraisal of farm property becomes increasingly important when estates become small and heirs numerous and especially when one of them wishes to remain on the lands he has inherited or possessed for long. And then improvements on lands and farms do have to be taken account of* for this purpose evaluation of farm property is imperative. Regarding landlord tenant relations, certain tenants may bequeath to the landlord certain improvements for which they should be compensated. Thus the subject is of special significance to the Agricultural Economist. Professional valuers are often employed in certain countries in order to perfect legislation. Equally important is the problem of placing values on the use of public and other lands while from the angle of the state acquiring the use of lands (in private uses) and ultimately owning the same, valuation of land is of significance. Similarly, problems arise whenever any form of cost accounting is undertaken for then not only is the annual valuation done for crops but also for lands, pastures and woodlands. Values have to be placed on the annual use of farm buildings, and on the man labour from the strictly accounting point but now we only concern ourselves with the valuation of property and not that of labour, cattle, or tractor work.

The Purpose We must be clear about the purpose for which valuation is done, for the value placed on the farm land may depend in a large measure on its purpose as also on the use which a farm is intended to serve. The only one value, that is commonly understood is the *market* value, or its price in a perfect market. But other types of values may also prevail. Market value is not the only type, there may be the *loan* value, *assessed* value and *insured* value. *Loan* value may be one which land may have as a piece of mortgage. It informs us what a piece of land commands in the loan market. *Assessed* value is reckoned from the purely property viewpoint, without reference to the particular aspects of farming, which the farmer has particularly in view. *Insured* value may be calculated from the purely insurance angle. All these values may be different in different countries, especially the *assessed* value, taken for the purposes of imposing taxes and rates on that land. There may also be the *customary* value or the one established by custom as prevailing in that particular part of the country. *Loan* value may also be different in various localities as the prevailing practices in the matter of extending loans may vary from locality to locality. *Mortgage* value would be that for which land is priced for the purposes of mortgages. This value is significant for land banks, which are fast becoming important institutions for the extension of credit to farmers. It means that for different purposes there are different valuations for the same

land, and each process of valuation may be entirely different from the one that may be adopted for the special purpose. We are concerned only with market values on the basis of incomes from the farms.

Evaluating Farms. Simple is the valuation problem in respect of farms when the stream of farm income is constant and income remains the same over a number of years. The present value is based on the *expected* annual income capitalised upon the rate of interest. But for the purpose of evaluation, land is not to be regarded just as a high grade bond (though the mathematical calculation is similar) but a species of its own kind, because while the bond offers a definite and regular income the farm could not do so. In the case of fluctuating incomes, the realistic speculative element enters, and the decrease or increase of incomes is on the basis of anticipations expectations, and speculations. Estimated increased or decreased incomes are capitalised on the basis of expected average rate of interest. True or real value of the farmland is the value based on *true earning power* of land. Net income takes true *normal* income of land and may be capitalised on the present (actual) rate of interest. Sometimes, past averages are taken both in respect of incomes and rates of interest and then capitalised on the basis of averages. Temporary changes in farm incomes are also to be reckoned with; they affect current values of farmlands. Calculations may be made either by discounting the *present worth* of land (its current values) or by putting premium on land values, according as these changes are in the downward or the upward direction. One word about interest rates *vis-a-vis* land values. A reduction of interest rates would put a premium on land values; and an increase, a discount. This is based on mathematical calculations. Capitalising on lower interest rates, say, 1% instead of 2% would double the value of farmland, while a higher rate say 4% instead of 2% lower the capitalised value of farms. Regarding farm buildings, the point is that these seldom yield incomes of a perpetual nature; as a matter of fact their productive life diminishes with the passage of time and their values decline accordingly. At any time, therefore, their values are limited by replacement costs. In the short run, however, these may rise above the replacement costs due to the demand for them becoming urgent, the time taken in their construction, or the impossibility of building. But in actual practice, they are not evaluated separately from farmlands, as they do not have, ordinarily speaking, any distinct value except that which they contribute to lands and incomes therefrom. But changes in farming systems would very likely change the relative importance of farm buildings; therefore, these structures could not have an independent value. Hence the method of appraising farm buildings on the basis of the cost of reproduction or reconstruction now, *less* the depreciation is not the correct procedure, from the purely analytical angle. Allowance must also be made for improvements in land, but the fact that these improvements vary greatly in their life-span needs to be appreciated. While certain improvements may be truly permanent (in that they become a part and

parcel of land) others may be *consumed* soon, e.g. fertilisers. Income from these improvements in land is to be included in the total income from farms, which are the basis of capitalisation, for the purposes of land valuation. We understand from this analysis that the valuation of farms is based on the anticipations of prospective incomes (only visualised) which may or may not be realised in practice.

The Pricing System From the foregoing, it is apparent that the value of land is calculable on the expectations of prices and incomes that it is likely to yield in the near future. But price also depends on the demand for the produce raised, lands which are capable of producing low grade commodities need not be priced much, while lands, which are highly productive, could be rated high. Expectations of income from the uses of land is another important factor influencing land prices: this has been examined above. Land prices may change as expectations of income change and not as actual incomes change, for the present incomes may not be realised later. And it is not the expectations of one individual person, but those of the farming communities in general that matter on the social canvas. It is in the real estate farm market that expectations and anticipations are crystallised in monetary form. Prices are fixed within the range of expectations, those of the buyers and the sellers including the potential ones, who only influence the price structure through their pulls on demand and supply factors. At the point where the supply and the demand schedules intersect is price of land settled, that is its *market price*. This price represents a certain level of communal and social anticipations, and should be regarded as the composite price inclusive of the prices of the buildings and the compensations for the improvements effected, it reflects earnings and incomes of land and buildings, but only the *expected* ones. Thus the pricing process in the realm of agricultural land economics is not the same as it is in economic analysis, land price represents anticipated earnings and is based on expected incomes, not on the present and actual revenues. This method of appraisal is explained below.

Assessment and Appraisal We switch back to the appraisal of farm values, being now better equipped to understand and appreciate the various factors bearing on the same. Market value is arrived at only for the purpose of assessment in a market, operating under ordinary circumstances and by the reliance placed on the judgment of those familiar with conditions obtaining on the real estate farm markets. One could collect data on selling prices and on major factors bearing on the same. On this basis, an estimate could be made. But the procedure, howsoever refined, could not give *true value*, for some factors could never be reduced to statistical measurement, e.g. residential values, as distinct from production values. Also well managed farms may be overvalued while the ill managed ones, undervalued. Loan values could not be scientifically determined, because conditions are rather unstable, therefore, based on the *average expected* income from the farms.

th conservative adjustments upwards and downwards arrive a normal loan value, which again may be revised in the context of anging conditions. *Normal* value is the price that an average purchaser is willing to pay; it is calculated from average annual production d normal prices obtained from farm produce. Here, too, the average y not be the *representative* average (representative in the Marshallian use) and bear no relation to actual situation that may be prevailing the market. Normal value is, therefore, quite hypothetical in its aracter. *Assessed* value is the one assessed by the state for the purpose legal exactions, like cesses and taxes. It is the official estimate of e valuation of farm property and is, usually, different from the market lue. Some standardised methods have been devised for arriving at the essed value of the lands, on the basis of standard rent, or some such easure, but assessment is generally of an inadequate nature, with the ulting shift in the uses of land. Taxing and assessing authorities : on the side of higher assessment; consequently, the poor lands may be essed high. This results in the farms being more intensively culti- ted or put to such uses as bring with them a higher return, or else re is "tax delinquency". Thus we see that valuation of land is ferent for different purposes; but it is the *market* value which should taken for our purposes, especially in this analysis.

Special Classes. This topic would remain incomplete if we did t enumerate various types of farm property. A detailed descrip n of all types may not be possible, for their number is legion- : we could content ourselves with a brief account of orchards, livestock, der and pastures. Orchards present special problems : they receive reasing amounts of labour and capital, without yielding any income : some time. After this stage, they begin paying; still, the expenses eed revenues. The next stage witnesses income flowing at an reasing rate, and expenses remaining constant or declining. In the t stage, income begins getting depressed (until it drops to zero) and : cycle starts again with replacement being undertaken for the useless es. The problem of valuation, in the case of an orchard is to deter- ne at which stage of growth and development it stands. Calculations : made on this basis, on that of land sites, the life-span of the trees d their replacement time with the costs thereof. In the light of those tors are orchards valued. Livestock and its valuation process presents et of relationships very similar to those adopted for orchards. luation of stock changes year to year with market prices of cattle oducts. A realistic procedure, however, for the valuation of the uestock is to use the long run average value of the breeding cattle l to adjust these values from time to time in accordance with ome prospects for the near future; if the prospective prices of the le products are low, their prices might fall, though temporarily. is method is analogous to the one outlined above for the valuation farmlands. In the case of fodder, too, the problem is resolved in a ilar fashion. The fodder prices are settled by demand and supply,

but the problem of valuation of fodder still confronts the peasant. Undoubtedly, present prices should affect this valuation but the fact stands that with the rise of prices, farmers usually economise with their fodder, for the temptation may be to sell the crop rather than to use it for purpose of feed. In order to steer clear of these ambiguities and pitfalls, incidental on calculations being made on the basis of prevailing prices, the best course is to evaluate the *business* part of the fodder at a rate higher than livestock prices, for higher prices are realised for fodder if the livestock is liquidated. This is in the interests of the proper use of fodder being ensured as feed for cattle. In regard to pastures and grazing lands, the usual procedure is to evaluate them on the basis of the current farm values in respect of this particular property. But this procedure could hold only for private grazing lands and not for public ones, which also may effectively raise the value of farm property due to the extension of grazing facilities to private farmers. Valuation of this public grazing land should be on the basis of capitalised value of the contributory income benefit to private lands. To this extent would rise the value of the private lands and farms lying in the vicinity of the public grazing lands. The valuation of the public grazing lands by themselves would be on the basis of rentals received for the use of these pastures *minus* the recurring expenses incurred on their maintenance. This means that the *capitalised* value of the net rentals would be taken as their true value.

Observations In the light of the above analysis, regarding the valuation of farms and property related thereto, it may be pertinent to observe that the procedure is nearly similar to the capitalised value of the income of lands under examination. This procedure appears to be correct for the valuation of all types of farm property. Also to be taken into account is the rate of depreciation in certain cases and the rate of replacement and reconstruction in the other cases. There are instances (e.g. orchards) where the rate of growth is the determinant of their prices. Studying the pricing process in the case of the farm lands and farm property, we noticed how it differed not a little from the method of price fixation in the ordinary routine of economic life. Farm prices are based on anticipatory incomes from farm lands and properties. Another noticeable factor is relative fertility, situation, and scarcity of the various types of land and property, as in this case.

SUMMARY

Divers are the points discussed in this chapter, bearing on the problem of location of agriculture. Stressing the distinction between agriculture and industry (the prevailing theories of location relate to the location of industry and not agriculture), we noticed that controlled factors operate in the industrial sphere and the natural (uncontrolled) ones in the agricultural sector. Among other distinctions, was one relating to that between *location* and *localisation*, the former referred to geographical situation, and the latter to the grouping of

industries. It was also appreciated how *defence* and *technique* shape the development and locational structure of industry and agriculture; agriculture being more under the influence of defence than technique. Trends towards *dispersal*, *decentralisation* and *delocalisation* (and their implications) were featured. Among the various THEORIES OF LOCATION, prominence was given to those expounded by Alfred Weber and Von Thunen, though the Law of Comparative Advantage was found to be the most important classical explanation. In the light of the modern theory of locational balance, were enunciated the main principles of planning in respect of agricultural location. We explained how it was possible to achieve the equalisation of the *social-marginal net product* in the agricultural sector. Next were taken into account various determinants of agricultural location. The part played by the *relative* and the *comparative* advantages in the matter of the location of agriculture, and the economic profile of a country, the zoning out of the agricultural production in the light of this factor, the cost structure in the pattern of geography and the inter-regional competition *vis-a-vis* the factor of demand, all these points were treated at length in this section, which forms the kernel of the chapter. The inference, drawn on the basis of this analysis, is that agricultural location is the resultant of various factors. Next were examined issues relating to the SELECTION OF A FARM; we studied economic and financial factors in respect of different types. Regional differences, natural and social factors, and prices and rents, all these points were noticed in their bearing on the problem of farm selection, which was regarded as a special aspect of the problem of location. It was considered pertinent to enquire into the principles of VALUATION of farmlands and other types of property, as bearing on the problem of selection. In this section were outlined the problems of evaluation and pricing, appraisal and assessment, and the application of these principles to special classes of farmlands and properties. This, in our opinion, was a necessary complement to the study of agricultural location in all its various aspects.

CONCLUSIONS

On the basis of the above analysis, it would be difficult to hazard any conclusions. It could only be said that the problem is rather complex. To its tackling, the theories of industrial (this term being broadly interpreted) location are hardly applicable. Even Von Thunen failed in this task, although his theory claimed to solve this problem. No single factor could be isolated to explain the phenomena. It is in the interplay of different determinants that some clue could be found to the phenomena of agricultural location and not by the impact of one single factor, howsoever forceful. The fact remains, that the factors responsible for locating agricultural enterprises in one place work themselves out and disappear, while these enterprises persist in the same place where they were. Agriculture always lags behind economic change. Institutional factors, are also important from the locational

angle. Agricultural location may be the result of habit and custom. Regarding the selection of a farm, it may be pointed out that the shifts in the matter of ownership or tenancy are rare, farmers grow a love for their farms, which they have been cultivating, hence the subject has to be looked at from this particular angle. It is the new farmer who ventures to make the selection, whether for the purpose of purchase or for renting. Still, it is instructive to assess various factors operating therein. Closely connected, therefore, is the subject of the valuation of farming enterprises and property. The guiding principle in evaluating farms and allied property is the capitalisation of expected incomes therefrom. This principle must be taken note of as it is in accord with that of evaluating other property, too. Noticeable is the fact that farmlands are a distinct class of property for the simple reason that they are characterised by variations in point of situation, productivity and scarcity, hence this principle has to be applied with modification. From location to evaluation is a far cry, but the linkage has been established somewhat.

CHAPTER XIV

PRODUCTION ON THE FARM

Production and Output—Gross Output : Measurement of Output : Net Output. What to Produce ?—Individual and National Outlooks : Prospective and Present Output : Maximum Long-run Productively : Shortages and Surpluses : Limitations and Conditions. Adjusting Farm Production—Theory of Adjustment : Adjustments in Agriculture : Methods of Adjustment : Farm Types and Adjustment : Local and Special Adjustments. Agents of Production—Agents and Factors : Enumeration and Classification : Land, Labour, Capital and Enterprise : Natural and Human Agents : Agents in Co-operation : Factors in Productivity. Summary and Conclusions—The Critique.

We are now in a position to understand the nature of agricultural production and the significance of the same from the analytical point of view. We have already appreciated the complexity of agricultural production : variety characterises it greatly, as gleaned from our survey of farming systems and management problems. In fact, production in agriculture covers a very wide ground. Very seldom it is that production on the farm is specialised; it is mostly diversified and of many types. This complexity is marked and an important characteristic of these enterprises. While in a factory production may be limited to a few things, on the farm it is spread over a large assortment of goods. Diversified farming seems to be the rule in agriculture, rather than the exception. Even on the so-called single-crop farms, production is not only confined to the growing of one single commodity, or the raising of one variety of it. Production is composed of various articles and their varied assortments. The reason is that production on a farm could not be, technically speaking, specialised, for even on the specialised farms, the by-products are many and these could not be wasted away. Agricultural production being diversified, the problem of correctly assessing the same is rather complex, too. In this chapter, we confine our attention to "agricultural production," not from the descriptive viewpoint, but from the analytical angle. We have noted above some descriptive traits (in our chapter on FARMING SYSTEMS) and enumerated the relative merits of specialisation as against diversification, which we regarded as the usual practice in farming.

PRODUCTION AND OUTPUT

Production may be defined as comprising those activities which result in goods and services. This is a fairly broad view. Agricultural production thus covers a variety of activities. All kindred activities are, therefore, productive, not in the sense that they must necessarily be efficient; in fact some of these activities are quite wasteful in that they adopt wasteful methods of production or are not well planned and do

not result in as much productivity as they could. Production should, therefore, be redefined as all those activities that result in goods and services that are to be exchanged. Production refers to the total of all goods and services that may be produced on a certain (production) unit, but *output* may be considered as having reference to goods and not to services (Output may be defined, in this context, as *concrete production*). Though the common terminology uses these terms interchangeably we should not confuse them but keep these in separate categories with definite implications. Production may be difficult to estimate, in view of several services, that may be provided free on the farm. A correct assessment of these services would be far from easy; it would be quite difficult to estimate their exact money equivalent. Hence, it is that we prefer to use the term **OUTPUT** and not **PRODUCTION**, for the latter would fail to convey the correct implications of the analysis in hand. We shall exclude free services, from our estimates, for our concern is with farm output, from the strictly economic angle.

Gross Output The composition of gross output in agriculture demands our attention. It may be useful for our inquiry to unravel its components in agriculture. Mainly, agricultural output falls into two groups, consumers' and producers' goods. This is a general classification, for it does not deal with the detail of farm output. In the former category are included all goods that are consumed away in direct form, and do not assist in the process of production. They satisfy the needs of humans, *qua* consumers. Some of them may have to be processed a little. Most of the agricultural commodities belong to these categories, for instance eggs, dairy produce and horticultural crops. Consumers' goods satisfy wants directly. Generally speaking, these goods are consumed in the form in which they leave the farm, sometimes after being processed, etc. Producers' goods are not used in the form in which they are exported from the farm. These may be utilised as raw materials for other industries. Certain products may be used as raw materials for food processing industries, e.g. livestock for butchering, or fruit for canning and tinning. Much of this "processing" may be done by farmers themselves, but the trend is to do it in factories. Also noticeable are those products which may be employed in manufacturing consumers' goods other than food, e.g. cotton, corn, etc. And in the third category are those goods which serve as raw materials for producers, e.g. flax, hemp. In the fourth class are those products which may be used for agricultural production, inclusive of green manures. This is the current categorisation with respect to the composition of agricultural output, but it may be pointed out that this is not quite a correct and definite description of its nature for the various categories overlap, and are not mutually exclusive. We should rather think of agricultural output in some other terms, *agricultural products*, *livestock products* and *horticultural products*. In the *first* category are various crops (cereals, food and all other crops). In the *second* group are included all animal products, e.g. milk, hides, cheese, meat

and glue, etc. In the *third* class may be enumerated such products as fruits and nuts. *Another* group could be carved out consisting of forests and their produce, for these also form a part of agricultural production. *Still* another category comprises of all fish products; this is a distinct group and not identical with other produce raised on the farm, nor with animal produce. Gross output falls into these *five* classes; and it is interesting to keep these categories distinct.

Measurement of Output. Next we study the methods of measuring gross output, with special reference to agriculture. This task is rather a difficult one. We cannot measure the output of different goods and then add them up in their physical units. Certain goods may be more valuable than others. A ton of wheat may represent a value different from that of a ton of manure. If reduced to labour units (as the Marxians would have us do) it would be a mess, for the skills involved in making different commodities are entirely different, even on the same farm where labour chores are not very dissimilar. Raising fruit is something distinct from growing crops. Newer methods of production are coming into vogue and reducing the amount of labour required to do similar jobs. It is misleading to estimate gross output in labour measures and also wrong. Whenever a new method of production is discovered, and computation made, either on the basis of qualities of articles produced or their labour-equivalent, it would appear that production has increased considerably, although that may not be so. The method of taking money value of the goods and output is the expedient usually adopted by the economist to solve this problem. Money values of all gross output is taken and added up to obtain a figure that may be regarded as the *true* gross output. This figure must be corrected to allow for changes in prices, for otherwise an increase in price level might apparently exhibit an increase in gross output. This difficulty is obviated by expressing values in terms of a single year, *i.e.* by the method of index numbers. The only difficulty is that of double counting, though in the elementary stages of production, this difficulty is not insurmountable. In farming, which is concerned with elementary production, this difficulty is not major. The value of the seed must be deducted from gross output, for the seed sprouts into the crop. And then too, the value of crops must be taken to include that of the straw. Such double counting may occur and must be guarded against. Another element must be allowed for. Equipment is a permanent factor and could not be included in gross output, for that would be miscalculating for this purpose as equipment is not consonant with the farm output. And to count it would be incorrect for the purpose of our calculation. But we should allow for depreciation and the wear and tear of equipment. Still another problem has to be tackled in this context: that of making an allowance for the stock in hand, for the farmer does not (mathematically) exhaust all the stock that may be lying with him from the last year, he would certainly have some of it being carried over to the current year. This is how gross output may be measured on the farms although we

must admit that a perfect method has yet to be evolved, for the qualitative (and relate), factors in production and output could certainly be not accurately measured by any of the above methods of calculation.

Net Output This concept is more commonly used in order to arrive at a most correct estimate of agricultural productivity. It is, therefore, the more significant measurement for the student of pure and agricultural economics. *Net output* is obtained by deducting from the value of gross output, the value of the purchased material, not produced on the farms but used in producing goods sold to a non-farming community. Certain commodities may have to be purchased from outside, both for the personal needs of the family and its dependants, and also to effect improvements on the farms. Net output is arrived at by deducting the value of these articles which are "imported" on the farm. This gives the peasant an estimate of the utility of his business. He is able to assess what he has gained from the enterprise. On a national scale, these calculations would give us an idea of the extent to which agricultural output is wholly produced from national resources. This indication is of import in gauging the self-sufficiency of the economy as a whole. To the nation, it also gives an indication of the extent of reliance on the "outside imports," i.e. dependence on imported resources. The main items may be livestock feed, (in so far as farming is not able to meet those made on the farm) artificial fertilisers, (as these may have to be wholly imported from outside the farm), seeds (as these may often be purchased from outside stores) and other equipment. In the extreme imaginary case, when all major articles are imported from outside, farming becomes a processing industry, for it merely processes various imported articles. Hence, this particular concept, when so worked out, indicates the extent to which farming is only a processing industry, dependent on external resources. Net output of agriculture is also significant from another viewpoint. It represents the net income of the industry, from year to year. In other words, it is the fund of rent, wages, profits and interests, and out of this fund must taxes be paid. It also measures net contribution made by particular farms (or even agriculture as a whole) to national wealth. *This net output (and net income) is a function of the twin forces of efficiency and price level.* Net income is increased with farmers' efficiency, but if prices are fluctuating, as under such unstable conditions, production would greatly suffer. This concept is significant from the point of view of the individual farmer, agricultural production and national economy.

WHAT TO PRODUCE ?

The sphere of production on farms is not unlimited, and, in this context, the question appears to be not very relevant to this discussion. But we must remember that it is designed to pose the problem on the canvas of his own individual interest and the broader ones of the national economy. The individual farmer should

not be blinded by his own narrow selfish interest, but be mindful of the larger communal and national interests, for farming is of national import. He must also reconcile the present and the prospective views, and see that his farm does not exhaust present resources to such an extent as to render the future totally unproductive. And it is proposed to enunciate the law of maximum long-run productivity, which lays a line of action for the farmer in planning his production programme. We shall have also occasion to examine the manner in which the peasant is able to fight out shortages and surpluses, for the latter may be undesirable from the farming point of view, the former may be injurious from the special social angle. The limitations of this analysis would be noted and specific conditions of production, too, to complete this analysis, for without this rounding off, this argument, remains lop-sided.

Individual and National Outlooks. From the peasant's angle, the guiding principle for farm enterprises, is to aim at the largest net profit: this is the motivating force of all production under the capitalistic system, and is not peculiar to the farming business only. The question is whether the interest of the nation is best served when the farmer tenaciously clings to his own selfish practices. Farming is of national import, not for the personal and narrow satisfactions of an individual farmer. The problem is whether, the farmer pursuing his own ends, and trying to get maximum net profits, acts in such a fashion as is consistent with national good. A conflict may arise between national, personal, individual and narrow interests. In that eventuality, we shall be faced with the issue if it is the national, or the narrower interests that should be promoted. To the extent that the greatest good of the largest number demands that the general and social good be the goals of economic activity, we have to view the problem as being of vital national significance, to be tackled in a manner so as to minimise the neglect of national ends at the altar of individual ambitions. The peasants' actions should be so guided and canalised that the highest social priorities are served. Human welfare or total welfare has long been recognised as the standard by which the laws of social sciences have been long accepted or rejected, and to which these laws (and practices) should conform. Of an abstract nature, the principle has conflicting interpretations in its practical application and the specific measures that may be adopted accordingly. The desirability of particular measures may as well be disputed by those who may, otherwise, have endorsed it. The policy-makers need more concrete standards to guide him in setting proper limits to free action of farmers and those with whom he may have social and economic intercourse. What should be the goal of agricultural policy? This question is so important as to be dealt with at length for an explanation and elucidation of the main props of agricultural policy. But first should be resolved the conflict between the individual and social goal of agricultural production which, verily, is the maximisation of communal welfare and not only profit-making by the individual.

It is not quantitative measurement alone that matters, for that may mean an insistence on the increase of production of such bulky articles as do not prove useful to the consumers or the society. Human welfare, being the accepted article of faith, human preferences are expressive of the welfare of the community. Valuations, put on different commodities are, more or less, expressive of the intensity of their desires, or "effective demand" hence the principle, that the highest value of agricultural production should be the goal set before the peasant. It may be pointed out that while farm produce may be greater, the economic well being of the people may not improve: this is possible with heavy duties on the imported goods with the consequence that the prices may register an incline without benefiting people or increasing prosperity. It is necessary, therefore, that the national and the individual points of view be reconciled instead of these being in conflict and one supervening the other. In the first instance, labour and capital should be properly allocated among different industries so that the factors of production be equally socially productive everywhere. Proper adjustment should be the first pre requisite to a better distribution of national welfare. Productive forces should be equitably distributed, in order that the conflict (in the sphere of agriculture) between these interests be resolved. This conflict may relate to the choice of crops, intensity of cultivation, control of weeds and of diseases, choice of live stock, quality and quantity of farm products sold, conservation of land and social economic welfare of different classes. An individual peasant may like to have certain crops and livestock but this may not be in accord with national interests, he may prefer to supply opium but this step may be inadvisable. National requirements may call for intensive cultivation, even though the peasant may not favour it. Similarly, while one may like to withhold a part of the stock (in order to raise prices for obvious reasons) such a decision may be opposed to national interests. Also individual and national opinions and preferences in several other spheres may conflict. We shall notice how to resolve these conflicts.

PROSPECTIVE AND PRESENT OUTPUT

A conflict may also arise in the matter of present and prospective production, the individual may only think of the present and of the near future production. While national interests may regard this as insignificant from the wider angle, the more important aspect may be that of prospectiveness. Hence must be weighed the relative importance of the two, and discovered the circumstances in which the present productivity is of greater importance than the prospective one. In a national emergency, the present output may be of immediate import and the sole consideration rather than the long term ones, e.g. in times of war, the greatest stress is placed on the maximisation of the *present* national output, while the individual may like to create temporary shortages in order to raise prices and reap gains therefrom. When shortages persist, national requirements would be to

produce the maximum while individual farmers may like to create a short-run shortage so that prices may be levered up still further and gain in monetary terms, increased. This is where the individual and national interests conflict in the sphere of present and prospective producing policies. And still, in one other respect, the present interests have to be relegated to the background, the peasant must so plan his production that he does not exhaust his soil of all its powers of cultivation for the future. The soil must remain capable of continued production, prospectively speaking, too, otherwise, the loss to national interests may be incalculable. Under absentee landlordism, it may happen that due to rack-renting, the farmer tenant, bent upon getting the maximum from the lands which he has leased, on an exorbitant rental, cultivates such crops as may drain away the full properties of lands and farms and leave them very much poorer than he found it. This is a usual case, and one which we frequently come across in lands where this form of exploitation still prevails. From the prospective point of view, the exploitation of land so as to impoverish its productive powers is rather shocking. Hence, even though the temptation to serve his present and immediate interests be strong, it would be damaging to the nation if the prospective view did not prevail. With the prevalence of the present and immediate interests, the business of the farmer could not only be of little value to national well-being, but also damage the peasant, in that he would suffer in the not very remote long-run, in point of decreased productivity and depleted output.

Maximum Long-run Productivity. The guiding principle of farm production is the law of maximum long-run productivity. Maximum production is the goal, in so far as the production aspect goes. Under a system of national economy, economic self-sufficiency may be the objective, at least in respect of the primary necessities of life. But stretched to the extreme, this policy results in producing only the necessities of life to the exclusion of comforts and luxuries, so essential to balanced living. Likewise may also be the preference to produce soldiers and ammunition rather than agricultural products. This policy may be agreeably practical but only in a country with large resources and large areas, both in respect of farms and equipment. But in the case of one, not so gifted, this may remain only a distant cry which could not be implemented. Therefore, the policy that could suit, without involving the nation in a maze of self-sufficiency (not ruling out some sacrifice on the part of the nationals and a lowering of their standards) would be that of achieving maximum long-run productivity. True, that consistent with the strategic needs of the national policy, would be to achieve as much self-sufficiency as it be possible without injuring national living standards. But in actual practice, this policy may prove to be of benefit to the nation. Without stretching this point further, we may discuss this law. The one objective of agricultural policy is to maximise production, so as to (incidentally) fulfil, at least partially, the objectives of self-sufficiency, involving the procurement of the

maximum necessities of life. The primary necessities are supplied by agriculture and the maximisation of its output would bring about greater self sufficiency than the maximisation of output in any other sector. The law holds good not in respect of the maximisation of output for some time, *i.e.* the immediate future only, but in the prospective long run, too. Implicitly, the law stresses the fact that the soil must not be depleted all at once, so that it is rendered useless for future, but that it should retain its productivity and be able to yield equally good crops in the future, too. This law is expected to point the way to increased agricultural productivity and the maximisation of output. The highest long run average value of the total product of agriculture may be taken as the goal, when we look at agriculture from the standpoint of maximum efficiency and productivity for the nation.

Shortages and Surpluses Production policy should take note of shortages and surpluses. In the real sense, there is never a surplus, for the simple reason that demand always remains unsatisfied (or partially satisfied) even in "surplus" country. This may be less true of agricultural products, for there is always a limit to human capacity in consumption. But even in this case, never is a stage reached, when demand is completely satiated in respect of the article in question. Hence absolutely speaking, the possibility of a surplus may be ruled out. Still, we do speak of this in the sense of the inability of demand to take off the articles at a certain price, which is not very high. A *surplus* would be said to have been created when the "fair price" is unable to absorb the whole produce marketed. Production policy has to be aware of surpluses and assure that these, arising out of excessive production, should be avoided as far as possible, for they represent a waste of human energy and resources. In the next section we shall talk of the method of achieving adjustment, but it may be observed here that surpluses could be fought out in *two* ways: by giving information to farmers in advance about the *trends of production* and by providing for *storage facilities*. The former would not let these be created while the latter would keep them for an opportune time, its efficiency depends upon the efficiency of the administrative machinery. Still another method is to bring about an equitable distribution: this depends upon the efficiency of the means of transport and their cheap provision. *Shortages* are more difficult to fight, for it takes quite some time to grow crops and other farm produce, the time factor is of great importance in this sphere. (A *shortage* may be said to have been precipitated when at the prevailing price supply falls far short of demand.) In times of shortages, the supplies must be equitably distributed, as that would mitigate their severity. Another method would consist in adopting anti hoarding measures to dig out underground stocks. The point to be restressed is that the national production policy, as also the efforts of a conscientious peasantry be directed to anticipating shortages and surpluses and producing accordingly,

they produce more of commodities which are expected to fall short in supply, and less of those which could create a glut; this requires very thoughtful planning ahead of production and is quite a hazardous task for the peasantry.

Limitations and Conditions. Some articles can be profitably produced in limited quantities and not in sufficient abundance to satisfy the national demand. This is because these require a special type of climate and soil. Examples are wool and fruit, which could not be produced everywhere, but only in specific regions. Proving to be strong competitors for agents of production, they utilise them to the exclusion of others. It is in these cases that policy is accelerated to securing their imports from abroad in order that soil and other resources may be released for the production of other commodities. It may, however, be profitable to produce these at home; in this case, it would be wise to weigh the costs of production at home with those of importing these; and assess the good that would accrue by diverting land (and other agents) to other uses. Wherein the comparative advantage lies, that course of action may be adopted. But if soil and climate are so specific (this can be true of the agricultural sector) that no other crops could be grown, then the switch-over should not be forced, as that would mean a loss to the nation. Mention may be made here, of an extended case of this type : certain types of commodities alone may be produced on certain farms and not all the assortments of goods that the national resource could profitably produce. The best policy would be to produce that assortment which has the greatest maximum advantage, and leave others for being imported. Supplementing agricultural production, when absolutely necessary, should be the policy that is the wisest to follow. In short, the national policy should be directed to securing the maximum well-being of the people in the generations to come. Applying this test to various conditions under which it is desirable to encourage farm production, into those channels, (in which the peasants have found it profitable to initiate it), we have to examine contributing causes, e.g. the lack of knowledge and skill on the part of the farmers, or the low profitability of the enterprise. All these things could be set right and production diverted to the desired channels by the diffusion of knowledge and training, or by subsidising peasants for undertaking that production as is favoured by the State. These are some of the salient features of the policy for directing farm production so as to assure maximum long-run productivity under conditions of competition.

ADJUSTING FARM PRODUCTION

Methods are designed to adjust farm production to the changing pattern of the economy. This change could have several aspects, trends, cycles, inventions and consuming habits. All the various subjects of change would be considered in a separate chapter on AGRICULTURAL FLUCTUATIONS, but at this stage we tackle the problem from a general

point of view. Changes could be *internal*, like those in agricultural technique, or in weather. These would be examined in the light of the principles enunciated here. The statement of the problem would be descriptive and stress laid on the methods of adjustment rather than an analytical explanation of the same. Most important adjustment is from the angle of the market, for without such an effort the peasant stands to lose, even if he be disinterested in markets, as the fact remains that the market forces do influence him, he could never be isolated from the rest of the economy. And then the market mechanism is interwoven into the economy and a change (e.g. commercial) affects even distant prices, which in turn, influence the peasant, even if he is practising subsistence cultivation or running his farming enterprises for the benefit of his family. The more perplexing changes for the farmer are from the market, for little does he understand the market mechanism, and the forces underlying its working. Another fact is that agriculture does not readily and easily respond to prices and markets as does industry. The necessity of adjusting farm production to a changing world is necessary in order to avoid the avoidable fluctuations harmful to the peasant in particular and the society in general. The basic disturbances (to be discussed in a chapter below) are severer than visualised and could hardly be tackled in an ordinary way. When we discuss the structure and working of the price mechanism we shall also notice how the same mechanism adjusts farming to public and national needs.

Theory of Adjustment The first step to an understanding of the theory of adjustment is the correct assessment of the way in which this is brought about in the economic sphere in general. Equilibrium is established by the forces of demand and supply, which settle prices. Working of this equilibrium may be illustrated by taking the case of falling prices. Assumptions are good knowledge on the part of the farmer and dealers and the freeplay of competitive forces in that arena. Bearing this in mind, we could visualise the consequences of falling prices. Production would shrink though the immediate impact may fall on the producer inducing him to curtail the supplies. And then prices would again rise to the original equilibrium level. In the event of rising prices the law of demand operates and (demand having shrunk) the original prices may be restored. Now looking at the same problem from another angle, we discover that the surplus is likely to be neutralised by prices falling and suppliers withholding supplies, and demand raising prices to the same original level. All this looks to be automatic but in actual practice it need not be so, for various complicating factors enter into these calculations. In the event of prices going down producers are expected to adjust their supplies restoring the same old equilibrium price. And in the case of rising prices, the buyers are supposed to restrict their demand and the prices fall to the same old level. This is too simple a statement of the situation to be in conformity with actual condition or prevailing economic practices. There is always a *time lag* in the working out of the responses, supposedly thought to be

working themselves out, in an automatic fashion. Then it may not always be possible for farmers, in particular, to restrict their supplies. We describe this situation by saying that agricultural supplies are rather *inelastic*. Similarly, in the sphere of demand, consumers' purchases for agricultural products may not be quite responsive, demand is also rather inelastic. Thus the adjustment to changing market needs and forces may be rather slow, if at all there is an impact. And then the peasant may not be quite aware of market conditions. Coming back to our theoretical premise, we have to make allowance for monopolies, which may also hinder the free-play of the competitive forces. The monopolist may resort to product differentiation and discriminating practices, thus setting at nought the market forces. And the *perfect market*, on which all our assumptions are based, may only provide us with an academic model; freedom of competition is limited in actual practice.

Adjustments in Agriculture. Applying the above conclusions to the sphere of agriculture, we find that adjustment is not so easy in the agricultural sector, nor the farmer so capable and efficient as to adjust farming to the changing market needs. Conditions of pure and perfect competition do not prevail in this sector : in agriculture, strangely enough, there is greater and better prospect for bigger crops selling than for the smaller ones; the marketing costs for the bigger crops are, relatively speaking, not very much higher per unit of the produce, while for a smaller produce, these costs may be rather prohibitive and prospects of its disposability much reduced. Another fact is that the agricultural costs and supplies are inelastic and, therefore, unadjustable easily to a changing situation. Short-run increases in the supplies of agricultural produce will only be possible by the use of more fertilizers and by a shift to more intensive form of cultivation. An additional consideration is that the cost storing the farm produce is rather high for it is rather perishable. This factor alone is responsible for non-adjustment of farm produce to changing market conditions. The long-run increase of farm produce is possible by making new capital investments, such as improving the methods of production and by using more and better equipment of the modernised type. Also, once agricultural production has expanded it is very difficult to contract it; and once it has contracted, it is rather an uphill task to expand it; expansion and contraction are much difficult to bring about in the realm of agriculture. But it may, as well, be pointed out that contraction takes place in the case of individual products rather normally, probably due to the operation of the law of diminishing returns. And the farmers do not respond to market changes so sharply, for they are not quick to act rationally. In fact, they are influenced by the prices ruling in the previous year, or those at the time. They are not so well informed as to anticipate market trends correctly. Weather, too, influences them. In agriculture, there are some products that are more easily adjusted to market conditions than others, this may be

due to their having a shorter production time span, or their being more manageable from his angle. One crop farms do not react to changes in the same manner as do the diversified ones for if the prices of single crops fluctuate these farmers stand to lose more than those harvesting the diverse enterprise farms. And lastly, the farmer could not possibly foresee weather changes, unless guided by experts.

Methods of Adjustments We now set out to study the methods, which if followed, would enable the farmers to adjust their production to the changing pattern of the market and the forces operating therein. In the first place, he must be cognisant of these, for without this awareness, effecting a change may be well nigh impossible. Hence, they should be more fully awake to the behaviour of prices than they usually are. This requires of them to make better judgment about the behaviour of prices than they normally do. They could also be better equipped with this knowledge by the state or other public agencies. In order to reduce waste in agriculture, the government should come forward to supply information in a manner more acceptable to them. Also the process of adjustment is greatly accelerated, if the farmers and those responsible for production in agriculture, do more planning and do it more deliberately. This planning should be in regard to crops to be grown and the enterprise to be followed in the next season, and the quantities to be produced. Planning should not only be *quantitative* but also *qualitative*. In making plans, (which must be chalked out at the beginning of the cropping and the planting seasons) the farmer must take into account the prospective costs of farming. The reason why this price cost calculation must only be prospective is quite obvious: the produce could be sold only after it is harvested (and that too, not instantly), the net income and the net output would, therefore, be of a prospective nature and not of momentary significance. If this vigilant judgment and control is exercised, the farmer is likely to be rewarded by a more qualitative adjustment and better responsiveness to the fact of change. More data may be required by the peasants in a more accurate manner. Lest it be thought that this frequent changing of the pattern of agriculture in the light of the various changing aspects of a dynamic system, is inadvisable, it must be borne in mind that the above suggestions do not in any manner advocate a continuous changing of programmes. It would do if the major programmes are altered at intervals of two or three years, while the minor changes made from time to time. It may also be noted that the peasant's judgment is not the best guide, for he may be unable to adjudge and interpret various factors, forces and data correctly. He needs expert advice which should come from public agencies, who could afford to employ the experts. In the light of this he could arrive at correct decisions, still his decisions in a free economy must be taken as entirely his own. The farmer manager would be well advised to keep a record of changes made by him from time to time and notice their impact on his enterprises.

so that he could arrive at more correct decisions in the light of his previous experience. The test of making these adjustments is twofold : firstly, how far the intended adjustment is going to be in accord with market trends and the economy; and secondly, how far the alternative proposed is remunerative, *i.e.* the most remunerative of all the alternatives before the peasant. We shall have occasion to appreciate the implications of price-forecasting and adjudge the efficiency of the machinery, usually set up for the purpose, but suffice it to observe here that the only way for the farmer is to place his reliance on public (expert) agencies making forecasts of prices and crops. And, above all, the provisions of state guarantees would also make the situation perfectly safe.

Farm Types and Adjustments. This aspect of adjustment goes with types of farming and products. In the highly specialised one-crop farm, the process of adjustment is the slowest. It is not possible to make adjustments on this farm, except by reducing supply; and even this step is difficult to take, in view of the fact that the crops already grown must be thrown on the market. In the case of prices getting low, the only thing that could be done by him (who correctly anticipated this change) would be to reduce the expected crop by less intensive cultivation, or else leave a part of the crop unharvested. If, however, that change is anticipated before the crop is sown, a part of the soil may not be sown, or sown with alternative crops. Similarly, on the farms specialising in livestock work, expansion is limited in the short run by supply of feed and fodder with the farmer, and contraction is limited by the extent to which he could withhold cattle produce from the market; or the rate at which feeding could be reduced, but the output falls off relatively slowly. *Culling* could very well be another alternative. Still another method may be to change the feed composition as between *roughages* and *concentrates* for that would bring about a different yield. Details could be worked out, the market demand and variations estimated. On the *general* farms, the opportunities for such adjustments are greater. The acreage of specific crops and the number of cattle could be increased or decreased as relative prices change; the amount of food and labour may be varied from year to year, depending upon price ratios. If the long-term and permanent changes are expected, the farmer may justifiably make larger adjustments on the basis of unusual circumstances. But speculative changes may often result in severe losses as suffered by him. But if changes take place out of season, the only thing that the cultivators could do is to wait and watch till the next season, while cattle farmers could bring about variations in the yield and nature of their produce. The bigger and the more successful farmers could effect changes much more easily than those with limited means. And anything like an overall shift in the seasonality of production would make farmers put in more intensive efforts to adjust accordingly, with the result that production increases though the costs of the same also rise. With persistent

technical changes, levelling of seasonal production may be possible. No definite suggestions could be made except to state these general principles even these conclusions may be modified in the light of special and unusual circumstances.

Local and Special Adjustments So far the assumption was that production is for the market. But more often than not, farm production is for local consumption only. A nearby city may be the market consuming a major portion of the produce from the local farms. Usually, local producers have local markets, in whole or in part, as is the case in the transport of produce (and its perishability) as also their intimate knowledge of local markets. Also these peasants do not produce articles of a standardised type or of very high quality with which to compete in the mofussil markets. Adjusting to this market is difficult. Expansion is possible as long as local market is in deficit. Vegetable production is different, for it tends to be erratic in itself and is based on anticipations or past seasonal experience. Most local producers take to this as a side line and drop in or out according to their expectations derived from the past. And this is the group that hardly adjusts to changing markets. A different situation might arise when local producers fail to supply as much as the local markets demand and the consumers use. In certain cases, cities have grown far faster than local produce. Or the produce may not have been raised by modern techniques. In such a situation, the first step is to obtain the necessary facts about consumption, supply and price trends and then act. Special markets resemble a commercial firm giving special brand names of a certain make. Opportunities of this kind exist. Some farms could dispose of their surplus produce by the mail order system though this is unusual. But greater attention is usually paid to the development of special markets by means of co-operative endeavour rather than by individual effort. This raises problems relating to a study of the market mechanism. Summing up on "adjustment to changes in markets, we think that these could be of a large variety. One thing is clear and that is that the process of adjustment is tardy specially in farming.

AGENTS OF PRODUCTION

Having discussed the main problems relating to the production of agricultural goods, we now proceed to deal with the AGENTS OF PRODUCTION. Production is a combined effort on their part. A discussion of the role, each of these plays in production, would be the subject of the following chapters. It is difficult to classify these factors satisfactorily. We follow the customary classification for reasons of clarity of analysis. Important theoretical results follow a clearer grasp of the facts about agents of production which are of superlative import when we attack the problem of the combination of productive factors. Indistinguishably do these factors work in co-operation with different results, often according to ratios in which they are combined. Interest

ing it is to note the results of these combinations. Again it may be pointed out that this classification exists only in theory, for in actual practice, even LAND, though regarded as a separate agent, has been highly capitalised, and is no longer purely natural. Difficulty of coming across pure agents is not peculiar to agriculture, it is marked in other fields of economic activity: still, economic analysis has traditionally proceeded on the basis of this classification. Hence, in spite of the many difficulties of detecting the *pure* from the *composite* agents, we follow this, due to its contribution to theoretical analysis in agricultural economics. With these observations, we give an introductory and brief explanation of the agents of production and their role in an agricultural economy.

Agents and Factors. A distinction is sometimes made between the *agents* and the *factors* of production. Benham suggested that the former term should be used only for groups of productive factors, while the latter, with reference to various producing constituents. The latter term may be used loosely to cover all types of machinery, labour, land, etc. *Factor* refers to each of the implements of production as a separate entity; each labourer is a *factor*. From this angle, there are many thousand factors of production. But the term "agents of production" conveys the idea of a group of several productive factors, belonging to collective categories and not as individual factors. All the agents and factors of production combine to get the desired result, *i.e.* enhanced production. We prefer to use the term, *agents*, in our analysis, for the reason that this term would provide us with an easier apparatus of study of agricultural production. It would be humanly impossible to get acquainted with myriads of productive factors, if we chose to adopt the analysis in terms of this latter classification. Hence, *agents* is preferred to *factors*. We do not intend making a specialised study of certain selected factors for that would be discriminatory on our part and also make this analysis rather partial. No use would, therefore, be served by attacking the problem in this manner. The practice of grouping together the various productive factors from the *functional* viewpoint has been adopted here.

Enumeration and Classification. Turning our attention to this classification we find that it has been customary to enumerate the agents as LAND, LABOUR, CAPITAL and ENTERPRISE. This *fourfold* division is taken as comprehensive enough for the present analysis, as it provides a basis for a full categorisation of the factors. A functional classification is regarded as covering all various factors. It is possible that certain productive factors may belong to more than one category, for example, land as well as capital, or it may be labour and capital simultaneously, for it may be able to perform more than one function. In fact, these factors may be *specific* or *non-specific*. The *specific* factors are those that are not able to perform more than one specialised function at one time. A plough could only be used for the purpose for which it is meant: it is *specific*; while a certain

piece of land could be used for several purposes, and hence, *non specific*. Not that only land could be thus used, there are all other factors, which could be similarly used. Again, it is not land that could be used only non specifically, even it could be specific, e.g. black cotton soil. The point is that the specific productive factors could not be used except for the purposes for which they are designed, while the non specific ones could be employed for as many purposes as possible. One thing that must be very clearly understood at this stage is that no factor of production is either purely specific, nor purely non specific. All factors of production are *mixed* types. Still another classification groups them as *homogeneous* and *diverse*. The former belong to the same family, and are often used in the same fashion, they are qualitatively of the same category. But the latter come from different classes. In actual practice, minor differences, as detected in the characteristics of the same, may be ignored and (if their major and vital qualities are essentially the same) they may be described as more or less *homogeneous*. But if these factors differ as to their major qualities, they have to be labelled *diverse*. *Homogeneous* factors of production are interchangeably used, while the others are of a specific character and not usable interchangeably. Another important classification is *divisible* and *indivisible* factors. This nomenclature has been relied upon by some economists to account for the laws of returns. *Divisible* factors of production are those which can be split up into smaller and smaller units, while the *indivisible* ones would resist such an attempt. They have to be treated as complete units, and applied accordingly. These are economical if fully employed, but should that not be the case, they often prove to be quite expensive. The *divisible* ones, on the other hand, may be adjusted in use as production contracts or expands. The *indivisible* ones could not be so varied. This classification has to be borne in mind when varying production, in the sphere of farming. Regarding agents of production we have to appreciate their functional character, i.e. the functions that they discharge. But more of this categorisation below.

Land, Labour, Capital and Enterprise. Agents of production have customarily been divided into four categories of land, labour, capital and enterprise. This enumeration is based on the functional analysis. It is, therefore, necessary to analyse closely the various functions that each agent does perform before we could fully differentiate between the same. *Land* is not only land, as commonly understood, it includes all the factors of natural endowment. Land, in this sense, would include climate and topography, soil and its slope, altitude, situation, etc. *Land* also covers farms and fields, their fertility and such natural properties. *Labour* means human resources, which the farmer may use in the process of production. *Farm labour* includes the labour of the farmer's family and the hired labour that he may use at times. But one distinction needs to be made in this connection labour is

that work which earns some remuneration, work done *free* is not labour. In this sense, free labour that is put in by the members of the farmers' families, is not to be taken as labour; still, it may be maintained that the farm family contribute to the farm work in the expectation of a better reward in the form of an increased output: hence it may be pertinent to regard this as labour. *Capital* includes all such factors as assist in the process of production and thus the *produced* ones, except land or labour. It covers money investments in land, implements of production and farm machinery. Capital is, therefore, a comprehensive term and an agent inclusive of vast multiplicity of factors of production. The term *equipment* is used for all the implements at the disposal of the peasant. With increasing mechanisation, the significance of capital goods has become more relevant to productive processes. And capital in its various forms is being increasingly utilised by the farmer; but this should not be taken to imply that the backward farmer is deprived of the use of capital goods: he is using the plough, the scythe and the sickle, all of which could be described as capital. The last agent, *enterprise*, is also important from the analytical viewpoint. A distinction is sometimes made between *enterprise* and *organisation*. *Enterprise*, in this particular sense, means the job of bearing *risks* and facing *uncertainties*, while the term, *organisation*, refers to *management*. The twin implications are that every farmer is both an entrepreneur and an organiser for he has to face uncertainties and do some management of the farm too. The above description of factors and agents of production should not be treated as exhaustive: it need only be taken to be of an explanatory and descriptive nature. Still this is of particular moment to this study.

Natural and Human Agents. Having discussed the functional aspects of production, we now proceed to categorise them according to a nomenclature, which though not analytical, is still of special significance in that it refers to another aspect of production. Agents of production may be described as *natural* and *human*: this description speaks of the resources of production, when classified as agents of production, as *natural* and *human* ones. Natural resources and agents of production are of special interest and importance to agriculture, which depends upon them for successful termination and completion of farm production. The natural resources, if they be of a qualitatively better order, are of a much better quality of agricultural stuff produced on land under cultivation, and contribute substantially to its productivity. *Human* agents include two agents, *i. e.* labour and enterprise, for the labourer and the entrepreneur both of them, are human. Labour is truly human in all its aspects, while organisation and enterprise are human in that these are functions performed by man. Enterprise and organisation are mental labour performed by entrepreneur and organiser; hence they are also forms of labour and thus human agents of production. A third category may be spoken of as *produced* agents and *non-produced* ones. The *produced* ones include

all capital goods that the farmer uses, his equipment and machinery. Earlier, too, we spoke of capital as a *produced* agent of production. As pointed out above, the *produced* agents are fast becoming more and more important agents of production in the farming practices today. Still, another classification is suggested, *i. e.* *primary, elementary* and the *secondary* agents of production. It is contended that land and labour are the *primary* agents while capital and enterprise are of *secondary* importance. The argument is that production could not have been undertaken without land or labour, while other agents, *i.e.* capital and organisation are dispensable. In fact, production could have taken place, even without the assistance of man, as in the case of forests which have thriven without previous planting. On the other hand, in planned production, undertaken without capital and enterprise, some amount of capital and enterprise are necessarily employed. Even a simple and raw farmer thinks in terms of planning (which is organisation) and has to face some sort of uncertainties (a form of entrepreneurial function) and that some amount of capital is indispensable to the carrying out of production, as no agriculture is possible without seed (a form of capital) and elementary implements. Hence, this classification is not scientifically correct, for it confuses the issues, and on examination, proves to be only skin-deep. The first classification is a little better, if to the threefold categorisation, we also added the fourth one that of animal resources, which from the farming standpoint are of paramount significance, especially in backward regions.

Agents in Co operation Having understood the implications of the nomenclature of productive agents, we proceed to examine their behaviour in co-operation, without which production is well nigh impossible. Agents have sometimes to co operate in set and *fixed* proportions as also in *variable* proportions. If they co operate and combine in *fixed* proportions, then their ratios could not be changed without loss to the productive process and its efficiency. But if the proportions, they are to combine in, are not rigid nor fixed, the combination in *variable* proportions may not prove injurious to productive efficiency. But the fact remains, that without the co operation of the agents, the process of production may not be completed and nor be it possible to initiate production. In the case of land, the distinctive characteristic is that it is rather fixed in quantity and the other agents and factors have to be adjusted to its needs and productivity. Bearing this in mind, we shall deal at length with the problems of combination of productive agents. But it may be pointed out that the significance of this process is for the peasant to appreciate, for it is he who has to see that maximum efficiency is attained. He has to assure that the ratios in which these factors are combined are such that the target of maximum productivity is attained and the best got out of them. The test for "optimum" combination is that productivity is attained to the maximum possible under the circumstances. Co operation of these factors also depends

on the availability of agents for otherwise some makeshift arrangement is made and the scarcer factors combined with the more abundant ones. It has to be borne in mind that certain factors of production may be essential to production and, its most important and indispensable part; without this production could hardly be carried out. The *essential* factors of production are combined with the *non-essential* ones. Often the essential factors and agents are scarce, for these are in great demand, while the non-essential ones could be dispensed with and need not be economised. This thing has also to be taken into consideration when talking of their combination. This preliminary and elementary survey of the problem is an essential prerequisite to the understanding of the problems peculiar to each individual agent: this we shall study singly and in detail below. Suffice to repeat here that without active and close co-operation and integration of the agents of production, it may not be possible to have production initiated and completed, even with the best of intentions.

Factors in Productivity. One thing more to be noticed is that these factors are productive, only when they combine with others. By themselves, they are hardly productive, and or at best their productivity is very limited. To achieve high productivity, the factors must be combined in correct proportions, *i.e.* in the *optimum* ratios. For example, a labourer is not efficient (productive) if he does not combine his efforts with equipment that should be placed at his disposal. A highly productive machine would lie idle unless operated upon by some efficient and good operator. Hence, the efficiency and productivity of agents and factors of production could not be spoken of in isolation. Factors of production, to be productive, must seek active co-operation of the other factors employable in the productive process. The productivity of a single factor depends upon that of other factors with which it combines and co-operates. There is also one more aspect; that is the integration aspect. In the event of good integration, the productive index of each factor would be high. But if fitting in is defective, these factors would lose in respect of their productivity. Hence fitting in should be done in a very integral fashion. It is a problem in management and organisation, and the wise manager would exert his utmost to realise this integration. Another thing, to be considered is about the fullest utilisation of each factor, *i.e.* its fullest employment. Productivity of a factor depends on its fuller employment as also that of other factors, working with it. In case, these other factors are not fully employed, this particular factor would be at a grave disadvantage in that its efficiency may tend to fall off. There is also some amount of inter-substitution among the factors of production, and to the extent this substitution of one factor for the other is complete, (and *correct*) in that the factor sought to be substituted for the other is of the right type, the process of production does not suffer; but if this is not so, there is a fall in the productivity of that particular factor as also

of the other combining and co ordinating factors. We have, in the paragraph, thrown some light on the constituents of productivity for the problem would crop up time and again in our discussions of the role that each factor plays in agricultural production lest it be thought that one single factor could improve its productivity by itself or in isolation.

SUMMARY

Having surveyed the various aspects of agricultural production it is proper that we summarise the main points, made in this chapter. Introducing the subject with an account of various basic concepts we defined and explained the terms *production* and *output* with their various implications. Distinctions were made between *gross* and *net* output, and *production* and *output*. What *agricultural output* is composed of was also brought out in detail, for this was an important point bearing on the subject in hand. In the next section was discussed the problem *what to produce* from various angles, individual and national, present and prospective. And the conclusion was that the *prospective* viewpoint was to be given greater weight than the *present* one. The national aspect must find acceptance with the peasant rather than that he devotes himself to the satisfaction and pursuit of the narrow selfish and personal ends in the sphere of agricultural production. The *law of maximum long run productivity* was next enunciated according to this principle agricultural production should be the maximum keeping the long run prospective point of view. We found on a critical examination of the law, that this principle finds wide acceptance as the guiding one in agricultural production to be followed by the national government and by wise and conscientious peasants. This law was examined and modified in the light of *shortages* and *surpluses* in respect of agricultural commodities, for the reason that in agricultural production time lag is very marked. We noticed various limitations and conditions peculiar to agricultural production and its special characteristics. In the next section, captioned "adjusting farm production," we attacked the problem of the adjustment of a farm to changing conditions of the market. This section was marked by a statement and elucidation of the problems and principles of economic adjustment with their application to agricultural production. More interesting, from our point of view, is a delineation of the methods of adjustment, which may be adopted by the peasant to adjust his produce to the changing conditions in the market. The problems of adjustment were also discussed in respect of special types of farming that may be taken up by various farmers. Local and special adjustments were also taken into consideration, without which the whole argument would have remained incomplete. In the next section, we made a distinction between the *factors* and *agents* of production and enumerated and classified them from the peasant's point of view. We saw how factors and agents of production act in concert, also how their mutual productivity is heightened thereby.

CONCLUSIONS

Distinctive conclusions were arrived at in the light of above discussions, which covered a very wide ground. Various concepts bearing on economics of production were found pertinent to the field of agricultural production. *Net output* is important, both from the individual and the national points of view. Again, in the matter of production policy, we discovered that the individual and the national points of view may be reconciled with a greater emphasis on the acceptance of the latter in times of stress and strain, also that the latter must supervene the former. It was also emphasized that production policy must be in accord with the principles of *long-run maximum productivity*. But to this a rider must needs be attached: that the agricultural system does not stand by itself in an isolated manner. Its production plan, therefore, must fit in with the general production plan and this integration must be as close as the one sought to be achieved in the matter of the combination of factors of production. Farm produce must be adjusted to the varying conditions on the farm but this must not be taken to mean that the peasant is always changing his systems to the varying market needs, for that would be an impossible task, rather difficult to hazard. Hence, the variations that may be effected must be of a minor nature, in case these have to be recurrent, and of major character in case these are to operate in the long term. Methods of adjustment must be such as to enable him to make change without much disturbing the whole range of productive forces, set in motion by him. The guiding principles involve a study of the theory of adjustment with application to the sphere of agriculture. In the different farming systems, and in the case of local and special demands, the technique of production would differ as also its methods: in fact, these may have to be varied accordingly. In the section, "*agents of production*," we had a preliminary introduction to the subject to be thrashed below.

The Critique. This chapter sheds light on production policies which may be followed by the individual and the state, in the light of the special considerations involved and also as an end to agricultural production. From the wider national point of view, the statesman should look at the whole country as if it were a single enterprise and notice what maximises national income and also calculate what the cost to the nation would be if the next better alternatives were followed. The most direct way is to set up national budgets of costs and receipts and expenditures with alternative production programmes. We do not, however, want to anticipate the points made in the chapters below.

CHAPTER XV

THE NATURAL RESOURCES

Natural Resources and Land—Meaning of “Land” Fertility and Location Other Natural Factors Irrigation and Drainage Functions and Characteristics—Natural Resources in Production Characteristics of Land Its Functions in Agricultural Production The Economic Aspect—Capacity of Farm Land Efficiency, Input and output Dimensions of Productivity Value of Land as an Agent of Production Diminishing Returns—The Economic Explanation, Forms of the Law Assumptions and Limitations Application to Farm Enterprises Countering the Law Importance of the Law Marginal of Cultivation Rents and Profits Land Management—Usage of Land Conservation and Maintenance Intensity of Cultivation Sub-marginal and Unproductive Lands Management Issues Land Improvements Natural Resources and Factors—Topography Climate and Rainfall The Geographical Aspect Physical Composition The Biological Factors Summary and Conclusions

Usually, the farm worker performs himself the twin functions of the labourer and the entrepreneur, hence we need not accord a separate treatment to the function of the entrepreneur and his work. Three main agents of production would be studied in this context land, labour and equipment (capital). We may make a reference to the work of the entrepreneur in the rural set up, but not as detailed as in the case of other factors and agents of production. Without entering on the controversy as regards the work and the contribution of the rural entrepreneur, we may point out here that the most important single agent of production in the agricultural sphere is *natural resources* or more commonly known as *Land*. We shall, in this chapter, make a study of the various problems and issues related to natural factors and land though in the chapters to follow, we shall examine the economic aspects of land in the act of production. In agriculture land and natural resources far outweigh other factors of production, for the business of agriculture is mainly confined to the usage and exploitation of land and the other natural resources, to which attention will be drawn presently. Agriculture could hardly be a working proposition without the use and exploitation of the natural resources, just as industry, without machinery and labour. It is, therefore, that we turn our attention to the discussion of land, before unravelling the problems connected with it.

NATURAL RESOURCES AND LAND

We discuss how natural resources and land influence and determine the pattern of agricultural production. A slight distinction may be drawn between, “natural resources” and “land”, the *natural resources* may be said to include all the different resources which nature has

bestowed on the farmer and the farming region, such as climate, topography and situation; while *land* may be strictly spoken of as land, whether under cultivation, or not. Either is dispensable to the process of agricultural production. In fact both land and natural regions form one single unit of productive agents and are to a great extent inseparable from each other. Without natural resources, such as topography and climate to assist land in its fertility and productivity, land would become useless as an agent of production. At the same time, without land performing its functions of production in a correct and efficient manner, the natural resources such as climate and location would be of little avail. Hence, it is that though visibly it is land (alone) that may be (seemingly) playing a more important part in the process of production, it is only in conjunction with other natural resources that the nature and character of agricultural operations as also the quantity of agricultural output is determined. It is desirable, therefore, to place these twin factors as inseparable from each other and then to view the problem from the agricultural angle. Indeed all types of economic activity require the assistance of natural resources and land to complete their production, but agricultural activities increasingly use land for the initiation of these operations. Agriculture makes the greatest demand on this agent of production. In ordinary parlance, land includes natural resource, for it is contended that when a man buys a certain piece of land, *use transaction* includes the use of air, sunshine, and rainfall all natural factors. This is true, but such natural factors as the locale of the piece of land and the special situation may vary from piece to piece and plot to plot: these are purchased along with land; still there are certain other natural factors that are not so intimately connected with land under question, for example, the slope of the region and the direction of the winds are not *purchased* along with land. It is better, also, for reasons of clarity to regard these factors as rather separate in order that we may understand and appreciate better the implications of the same. But since land is the most important factors and the more important of the two, we initiate this survey with defining land.

Meaning of Land. Land, in the sense in which we use this term in this chapter, means not only the earth's surface but also natural properties that are associated with it, namely, sunlight, climate and rainfall, etc. Factors of location and situation, fertility and reproductive powers are associated with it. All these adjuncts are to be included in land in so far as they contribute to the productivity of land and affect its use. It is often pointed out that much of the land today is capital-invested and should not be regarded as *land* but as *capital*. The contention is that much of the land is *man-made* and hence it is either the product of labour or capital invested in it by man. Be that as it may, the fact remains that man-made properties also behave like natural ones, or they would not contribute to the productivity and efficiency of land. The pro-

perties that man imparts to land by his work and labour and investments, are in accord with the natural ones - he merely reinforces them. For instance, a piece of land that has been given a dose of fertilizers becomes more productive for the simple reason that this particular plot has its natural productive qualities reinforced by this addition for artificial nutrients behave in a manner nearly the same as the natural fertilising agents do. Or they set in motion forces that aid natural agents and attain increase in fertility. Hence, we concede that land must not be regarded as belonging to the same category as capital, for that would confuse the issue. Land must be treated as an agent of production distinct from other agents of production. Land includes soils or plots cleared for the purpose of cultivation for the purpose of providing floor space for cattle or for their grazing grounds. Land also includes natural qualities that are beyond man's control and influence, and lie outside the scope of modification by him such as climate. This is what we understood by the term *land* as used in Agricultural Economics.

Fertility and Location Much importance has been attached to the twin aspects of fertility and location in the enumeration of factors of production in the 'natural resources' group. In fact those two are the most important and inherent qualities of land. The attributes to good land lie in fertility and location. Indeed these are the most basic of the qualities of good land. Land well situated is worth the bother of having it, as also a land which is fertile, on the other hand, land with low fertility and or bad situation is not worth a penny. Hence special importance attaches to these twin aspects of land. Fertility is an over-all term and includes several other factors such as retention of moisture land and its soil structure. In a way, it is an index of the economic value of land from the agricultural point of view. Location is another constituent of land values, it informs us as to the situation of land the environment it is located in and the place it is to occupy in the social and economic set up of the regional economy. It is possible that a less fertile region could be made more fertile and a badly located place, more centrally situated, by the improvement of land and locale. By adding fertilisers and nutrients to land, the less fertile regions could certainly be made more fertile, and by the improvement of the means of transport the difficulties in the way of bad situation and location could certainly be overcome. All this is within the realm of possibility, but all this will cost a lot and even then the amounts of effort and money expended in these may not repay themselves in the form of gains achieved. A naturally fertile region of agricultural cultivation may be far superior to another which has been artificially raised to that level, also a more centrally located and better situated plot (in respect of water resources and similar factors and accessories) may always remain superior to the one to which all these have been provided at some cost. Fertility and location, therefore, have to be regarded as of national importance and categorised in the class of natural resources and land.

Other Natural Factors. Among the other natural factors which may deserve special and separate mention, we might allude to topography, climate, slope of the land, and soil structure. While the last may be included in "land", (the reason being that land, which is used for cultivation is associated with the attributes of fertility, an important constituent of which is soil structure) the others stand out as independent factors and must be thought of as distinct from land, but included in "natural resources". *Topography* may be very important factor influencing production on land and also responsible for the pattern of agriculture; this was brought out in an earlier chapter. The other factors, climate and slope of the land are also important from the point of view of production and cultivation and do determine the character and nature of the productive enterprises. They have to be enumerated as such, for though they may be associated with land, they are not, strictly speaking, inherent in the properties of land, they are external to it. And in this enumeration, mention must be made of the factors like altitude, and distance from the sea or the place that a certain piece of land occupies in the landscape and other such factors. This is to give an idea of various natural factors proposed to be treated in this chapter. We may point out that these natural factors not only influence the productivity of land, therefore, of agriculture, but also the outlook of the man behind the plough or the man responsible for the upkeep of cattle, for he has to act within the strict limitations of the natural forces and factors.

Irrigation and Drainage. Land could be improved and made better suited for cultivation, if it is well irrigated and better drained. In certain lands, it is difficult to decide whether they are lands or pools; they are in need of proper drainage, while in the case of other lands which are often described as "dry lot", the problem is that of irrigating them. Though these are artificial means of restoring to land, its natural fertility and the natural qualities, by eliminating the undesirable ones, the point is that both these methods are useful in rehabilitating land and making it cultivation-worthy. Drainage is an important method of expanding the area of improved farm land. Lands which are lying along the coasts and rivers, have sometimes to be drained of the marshes and the swamps which are infecting them. We intend talking about drainage at length in our section, "reclamation of land," in the next chapter, but suffice it to remind the reader that most areas in the Dutch farm lands have been drained and made fit for cultivation. It is now recognised that drainage may go far to improve lands, already under the plough and bring more areas under the plough. Irrigation is a very familiar method of bringing dry and arid lands under cultivation and thus extending arable area. This is usually followed in nearly all the regions of the world to make up for the deficiencies of land. Various costly projects and plans are under implementation in India for the initiation and extension of the irrigation facilities to the various dry lands, thirsting for water. It is being claimed that with the

generation of atomic power and its application to irrigation, it will be possible to irrigate even the deserts which are at present unfit for any cultivation and other purposes. But the fact to be noticed by us is that the extension of irrigation means the extension of the land under cultivation. Also natural deficiencies are made up by drainage and irrigation, for land is unfit for cultivation or for any other farming purpose if it is ill provided with water or provided with an excess of water. It may be pointed out here that the purpose of this section has been to elucidate the role that the natural factors play in the agricultural sector, to bring out their importance and to assess the relative values of land and other natural factors (enumerated above) for the agricultural operations and enterprises. We have also, incidentally, mentioned the factors that might aid the natural forces in their operation or make up for the natural deficiencies. Assessed in this chapter is the relative contribution of land and other factors to the furtherance of the agricultural activities. And this preliminary survey is an important link in the analysis.

FUNCTIONS AND CHARACTERISTICS

Turning our attention to the functions and characteristics of land and other natural resources in the field of production, we find that they are indispensable to agricultural production. While it is possible to economise the use of land in industry and commerce, it is hardly feasible to do so in agricultural pursuits, if we wish to reap the best out of it. True, that land could be economised with the introduction and extension of scientific methods and intensive forms of culture, but the fact, that this may be not of a substantial character, needs to be noted. We can raise larger produce from a smaller plot of land by intensive methods of cultivation, still we could not dispense with land altogether. Land (and a minimum area of it) must always be required for the purposes of cultivation and even for other agricultural pursuits. And then intensive forms of cultivation could not be introduced at will, they do cost a lot and that way economy in the land use may be offset by the raised cost of farming. Hence, a consideration of the most important functions and characteristics of land from the agricultural point of view would repay us. In this section is viewed the role of natural factors in production, non agricultural and agricultural as well. For that is an important aspect of the place that they occupy in general economic production. With this preliminary observation regarding the place of these natural agents in the general economic set up, we shall assess the characteristics of land from that point of view. This, again, is an important link in the argument as presented here. In the next para are given the functions of land in regard to agricultural production. This is important for an understanding of the main issues attending economic usage of land in the agricultural sector. Bearing this in mind, we

assess the importance of natural factors in agricultural and non-agricultural work.

Natural Resources in Production. Natural resources play a great part in determining the general economic outlook of the country, for they have an important say in the matter of agricultural production, and through that sector, have a bearing on the rest of the productive activities. In regard to agricultural production, their place is very significantly of a conclusive character. The cultivation of certain crops and fruits could not be carried on in unsympathetic natural environments: certain climates are a necessary pre-requisite for the cultivation of certain crops. Similarly, topographical considerations might far outweigh others in the launching out of certain agricultural enterprises. It may be stated without fear of contradiction that the complexion of farming enterprises is determined and shaped out by the interplay of natural factors. In this way, (through the agricultural operations), the influence of the natural factors and resources is of great consequence for the national economic activities in general. This is the indirect bearing the natural resources have on the general pattern of the economy. But their significance is not only of an indirect nature, they have a direct bearing on the pattern and design of the non-agricultural activities. In a country where climatic conditions are forbidding, the nature of industrial activities may be indoor for it is not possible to work outdoors. Where climate is tolerable, economic operations are often mostly of an outdoor nature. In the hilly tracts, the mode of economic pursuits is altogether different from the one followed in the plains. Along the coastal areas, the nature of professional pursuits is significantly local, typical of the coastal regions. It can be safely concluded in the light of this analysis that the occupational set-up of man is largely determined by forces of a natural order. It may be conceded that the recent scientific advancements have conquered the visibly invincible forces of nature, but the fact remains that nature still dominates the sphere of man's occupational distribution, as the cost of installing such apparatus to enable man to fight out nature completely is very costly indeed and such installations are only peculiar to the richer and the more highly industrialised sections of the world economy, while the backward and the transitional economies follow the dictates of nature to a very large extent. In still another manner, the natural forces and resources affect the natural economic pattern. In the absence of certain natural resources, advancement is much hampered and of a different complexion than what it would be, with these resources at hand. If certain minerals are available, the industrial and commercial set-up would be different from what it would be otherwise. We have seen how tapping of the oil resources in the favoured regions has made their economies very much flourishing. Hence the irresistible

conclusion is that the economy of the country is much affected, directly and indirectly, by the natural resources, including land (and its distribution among various uses) and whether those natural resources are, or not correctly utilised in that economy

Characteristics of Land Land has some important characteristics from the points of view of agriculture and of economics. The more distinct are the following land is, more than any other factor of production, subject to the law of diminishing returns, *secondly*, it is scarce in quantity, and *thirdly*, it is heterogeneous in quality. A discussion of the implications of the law of diminishing return in its bearing on the economic activities in general and the agricultural activities in particular will follow in a separate section, suffice it to say here that though other industries also experience this law at a later stage, agriculture does so at a very early stage of its operational routine. The general statement of the law points to the fact of the general trend of successive doses of labour and capital input to result in diminishing output for additional units. We must, for reasons of clarity of thought, postpone the discussion of this law to a later section, where we study its fullest implications in respect of agricultural conditions and of the economy in general. The *second* characteristic is that land is limited in quantity, the point that needs to be emphasized is that while other factors are capable of increase by man, land is not so easily subject to this action. Land is not reproducible in the same sense as the other factors of production are. In a way, labour is also reproducible, for by following a certain population policy increase and decrease of population could be brought about by the State or the planning authority. More land can only to be added to the stock already in the present-day world by means of reclamation procedure. The possibilities of reclamation are not inexhaustive: they are very much limited in the present-day world, hence, too, and is limited. The *quantitative* limitation of land has a *two fold* implication, in the first place, the land area of the world is by itself limited and *secondly*, large sectors of the world's land area are of no use for agricultural operations. The first point is self explanatory, the total area of the world's surface is limited, and the area devoted to the habitation of man or known to him is also limited. In the second instance, the estimate is that only about one-ninth of the total world land is available for cultivation purposes. This is because of the fact that a larger area is under mountains, lakes, and towns, etc. This point has significance for population theorists, Malthus based his entire population thesis on this fact of the limitedness of the land resources of the world *vis-a-vis* global population. Food supplies, in his opinion, were circumscribed both by the limitation of land and also the impact of the trend of the diminishing returns on the system of food production. It is lucky indeed, that his grim predictions have not come out true in certain communities. In larger parts of the world, the predictions of Malthus,

which were based on this scarcity factor in regard to land, have proved to be considerably correct. While the war on diminishing returns has been successfully waged by the agricultural scientist, world's resources in respect of scarce lands have not yet been expanded, they have altered very little, if at all. The *next* characteristic, heterogeneity of land, is responsible for greater and more intensive cultivation in certain regions. The heterogeneous character of land is derived from the complex of fertility associated with varying soil types, altitudes, topography, its slopes and climatic aspects. It is also possible that varying situational aspects of lands are responsible for this heterogeneity. Heterogeneity of land is of great importance, for the simple reason that its varying fertilities make it suited to various crops, for if all lands were of a homogeneous character, the result would have been a monotony of production and a very narrow range of the crops that could have been cultivated in that certain region. Hence heterogeneity is also a boon, in that lands become variously useful for quite a number of uses and yield a very large range of crops and other produce. And no two tracts could ever be identical, for even if they were in respect of fertility, soil structure, climate, sunshine, slope configuration, altitude, and rainfall they could never be so in point of situation and location. No two soils could be identically located with respect to accessibility, geography and environs. Hence this aspect of heterogeneity is a very significant characteristic of lands and soils and agricultural production.

Its Functions in Agricultural Production. Broadly speaking, the main productive (agricultural) functions of land are *three*: supplying the "floor space", supplying minerals, and supplying conditions essential for the growth of plants. The first two are also important, though they may not be so regarded from the strictly agricultural and farming point of view. But a deeper examination would expose the absurdity of the contention, that agricultural production is only concerned with the growing of plants, of the raising of pasture crops, for the sustenance of livestock reared on cattle farms. The fact is that every act of production must have some floor space on which it is to be conducted: without this minimum of floor space even the process of industrialisation could not be carried out. The *first* and foremost function of land is to provide this floor space for towns, industries and farms. Without this, production would be inconceivable. Again, from the agricultural point of view, the requirements in regard to floor space are much larger, both absolutely and relatively speaking. In an absolute sense, the farmer needs land for his cropping operations, while relatively speaking he requires much more land than does any other person, say the industrialist or the commercial trader. And then the farmer does require much larger expanses of land in relation to the scale of his industry than does any other entrepreneur. That is why even now, so much of the world's land is devoted to agricultural pursuits even in the highly industrialised countries like U.K. and U.S.A. The *second* characteristic

is that land supplies minerals, this is also relevant from the farming point of view, though not very directly speaking. The fertilisers required for the maintenance of the land's productivity at the same level are mined, and therefore, the availability of these have a bearing on land fertility. Even directly, underground resources, not only in respect of the minerals, but also in respect of water, so necessary for the irrigation of land, often comes from artesian and tube wells, which might have been installed. Hence this, too, is pertinent from the point of view of land fertility and agriculture. In the *third* place land is the most important single source for the supply of factors favourable for the raising and development of standing crops and for plant growth. It may be pointed out land's functions in this respect are manifold, it supplies growing plants with nutrients out of its own store of natural resources. It catches rainfall and stores it and gives it back to plants in the form of the much needed food material. It absorbs the heat of the sun, and by converting the soil material into the acceptable nutrients helps in the process of plant growth. And it furnishes the medium through which physical, chemical and biological processes convert soil nutrients into materials for the growth of plants. It also supports growing plants. All these functions that the soils perform are related to the maintenance of their fertility which, to the farmer, is the manifestation of the source of the growth for plants and crops. Soil fertility, in this context, includes all factors, climatic, geological, biological, mycological and subterranean, necessary for the growth and development of crops. The functions of the soil, related to the maintenance and improvement of its fertility, are of paramount importance to the farmer and the policy-maker alike, without this fertility, the continuance of the growth of plants and the maintenance of livestock and cattle would be well nigh impossible. It is sufficient to say that soil fertility is essential to farming operations.

THE ECONOMIC ASPECT

Having assessed the more important functions of land (and natural resources), we turn to the discussion of their economic aspects. We analyse in rather detail, capacity, and efficiency, input and output, of land and then assess what the dimensions of productivity are in this context. How would the efficiency of land be measured? This will give us an idea of the value of land as an agent of production. The law of diminishing returns in its bearing on farm land will be discussed and the importance of this law of production brought out. Also will this law be applied to the productive process as it works itself out on the farm. We may discover what the margin of cultivation in respect of land is and how this margin of cultivation responds to changes in productive processes. A distinction is to be made between profits and rents. The object of this section is to bring out clearly the economic aspects of land, their contribution to the productive process and the importance therein. The productivity

of land is limited by its capacity, while the input-output relations determine the range of its productivity. But we shall have to know what the dimensions of productivity are if we wish to gauge that. That will give us an idea of the productivity of land and therefore its value in agricultural production. And then it fits in the law of diminishing returns with reference to land, for this will provide us with the prospective land productivity or its permanent value to agricultural enterprises. We shall study the law in all its various aspects. A study of the margin of cultivation, in this context, will inform us about the utility of land in the productive process. That may provide a clue to the distribution of land in its various uses. In this connection would a reference be made to the explanation of rents and profits. In short, all the various economic aspects of the problem are studied in rather detail.

Capacity of Farm Land. Farm land varies in its economic capacity measured in terms of the doses of labour and capital and the units thereof, which could be associated with it, with a view to obtaining maximum output. This is an explanation pregnant with certain implications. In the *first* place, the object of investing more and more units of labour and capital is to secure *optimum* results. "Optimum results" mean maximum production that is possible in a certain set of circumstances and economic development, for in a higher stage, the output is definitely raised, while in a backward economy it is likely to be lower. Hence the implication is that investments in land are consistent with a certain amount of precision in regard to successive units of capital and labour. *Capacity* is measured by the doses of labour and capital, (in the measure of their units) that could be profitably invested in land. It is dependent on rainfall, climate, topography, texture of the soil and crops grown. In regard to the last, the fact remains that certain types of crops may be more suited to that land than others. With more suitable crops, the capacity of land is bound to rise. We aim at optimum productivity; and this could not be attained without growing the right type of crops, that suit the land most. Hence a correct estimate would only be gained when the correct crops are cultivated. For instance clayey lands have greater capacity with reference to certain crops, for which sandy soils do not have. In other words, lands with high clayey capacity admit of a greater intensity of cultivation in the production of certain crops than the lands with low capacity. More intensive cultivation could be carried on in the lands having, greater capacity than on lands with lower capacity : this is apparent.

Efficiency, Input and Output. Economic efficiency of land is measured in terms of the value of the product per unit of labour and capital, expended on it. This means that *efficiency* is measured in terms of output per unit of input, *i.e.* the *input-output relation*. We need to be clear about the terms "input" and "output" before we could understand the term "efficiency". By "input" is meant the investment of doses of labour

and capital that are expended on a certain piece of land. If a few units of labour and capital are expended on a plot of land the input of that land is low, and *vice versa*. By *output* is meant the produce that is gained out of the investment. But it must not be understood that by *input* we understand the units of labour and capital per unit of the land, that would be its *capacity*. We only measure the units of land and labour (investment) in total terms. In view of this, output could be described as the produce obtained out of land. The *ratio* of *output* to *input* is its *efficiency*. Efficiency is, therefore, the output per unit of input on the land. *Capacity* is measured as the *input* per acre of land. This input output ratio or efficiency is an important measure by which comparative values could be established in respect of the different pieces of land differently situated. In regard to input output relations, it may be pointed out that we may distinguish between the land input, or the amount of the fertilisers and such qualities that already inhere in land, and the input, that is secured through mechanical means and that which is due to the new fertilizers. This *land input* is paid for by the price of the land, while *machine input* is in terms of capital invested in land and crop input, labour and fertilisers expended. All these various inputs have to be considered by a farmer who is to calculate the input output relations. Another point is that we have to take the *gross output* of the farm and not its *net output*, which is calculated by subtracting the expenses of cultivation from its gross produce. For the purposes of calculating the efficiency of land, we need the gross output and not the net output of the land. When calculated in this manner, we arrive at the efficiency of land, which, to repeat, is measured in terms of input output ratios for it.

Dimensions of Productivity Having gained an idea of the efficiency and capacity of land, we now proceed to measure the dimensions of productivity so that a scientific assessment of the productivity of the different pieces of land be gained, and also a comparative view of the same. To put it very briefly, we might say that capacity and efficiency are the twin dimensions of "productivity". Merely by comparing the output of the two pieces of land, it would not be possible to gain an idea of the comparative yields, for that might be due to its greater input on the basis of more fertilizers, or more labour expended on that piece of land or it might be due to better equipment used for that particular piece of land, a number of different factors could as well be responsible for the increased output on one piece of land as against another, supposing that the two pieces of land were identical in size and chemical structure. Hence a more accurate measure is needed. On the one hand, we could gain a comparative idea by its efficiency. But this also would be misleading, for it is just possible that more input which has been expended on one piece of land may be due to its greater capacity hence more accurate comparisons are only possible on the basis of capacity being taken into account. The reason is that the greater ex

penditure incurred in respect of input in a certain piece of land is often the main cause of higher output of that land. More labour and capital should have been expended on the other piece of land, but that was not possible in view of the low capacity of that other land to absorb more labour and capital, which could have been expended on it; if more labour and capital, in the form of more fertilisers, irrigation facilities and better equipment had been invested on that land the result would not have been an increased productivity, possible to secure by a better absorption of labour and capital: that would be labour and capital wasted. Hence the comparison must also be initiated in terms of capacity of land. A correct comparison could be couched in terms of both capacity and efficiency and not in terms of either. The gross product is equal to capacity multiplied by efficiency. In order to find out a good and correct comparative view of the relative productivities of two or more pieces of land, the twin factors of efficiency and capacity must be taken into account. In order to compare the worth of the two *grades* of land, one has to find out the number of capacity units per acre of land and then the efficiency per unit of capacity. This means that productivity is the efficiency per unit of capacity or the efficiency-capacity ratio. Thus the relative worth of the two units of land and their relative productivity can be found out.

Value of Land as an Agent of Production. The more important thing from the economic point of view is the value of a piece of land from production angle. The economist is concerned with the value of land as an agent of production. In this connection, confusion must be cleared regarding the term "value", which, in this context, need not be understood as being the same thing as implied in the last chapter, *farm management*, where value was thought of as being the outcome of the process of evaluation. We do not want to evaluate the two pieces of land separately, but would prefer to assess their relative values, from the point of view of productivity. It is intended to gauge the value of a piece of land as an agent of production. Bearing this in mind, we can enunciate the main principles. In comparing two pieces of land, physical productivity is not a safe measure, we need also think of location and the relation that a certain piece of land bears in respect of the marketability of its produce. A farmer intending to go in for a piece of land, must take into consideration topography fertility and the location of the land. In fact, the physical and chemical properties of land are greatly influenced by its locational and situational factors in respect of that piece of land. This is because heat and moisture (factors responsible for fertility and topography of the soil) are variable from place to place. The composition of the rocks and the structure of the sub-soil are greatly influenced by geography. In addition to these factors, there are natural conditions which vary from place to place. There are also variations in the social conditions, which influence the marketing of the produce and indirectly the pro-

ductivity of the land under consideration. This is understandable in view of the fact that larger populations are influenced by social and environmental factors, often the determinants of rural settlements. The variations in density are explained by physical factors, though we are more concerned with the effect of these variations and not with the causes of the same. We have to appreciate that this means better marketability of certain agricultural produce, and low marketability in respect of certain other places. Land, therefore, varies greatly in its economic productivity, that is, the productivity of land from the point of view of *Economics*. It is in consideration of both its economic and physical productivities, as calculated above, that the value of a certain piece of land, as an agent of production is arrived at.

DIMINISHING RETURNS

The law of diminishing returns has an important bearing on the choice of decisions that a farmer makes in regard to the degrees of intensity of cultivation of his land. This law is regarded by certain economists as of universal application to industry and agriculture. In the words of Marshall, the statement of the law is as under: "Any increase in capital and labour applied in the cultivation of land causes in general a less than proportionate increase in the amount of produce raised, unless it happens to coincide with an improvement in the arts of agriculture." This statement regards land as *fixed* factor of production, but the law also holds good when labour or capital and not land is the fixed factor. A diminishing increase in the amount of output is the result of an increasing input of doses of labour and capital. This law establishes the input output relations as declining progressively. The essence of the law, as enunciated by Marshall, is that the successively increasing inputs of any factors of production applied to the fixed amount of other factors of production will after a certain point, tend to produce diminishing returns from each additional unit of input. In economic terminology, the marginal productivity of land goes on increasing at a diminishing rate. To a point, the marginal output may also increase, but after that point this also begins to decrease. The shorter phases of increasing output were also coincidental with the most rapid increase in the total output. After the output begins to decline, diminishing returns set in, i.e. the rate of increase in the total output is a diminishing one. The incremental increase in the total output is on a decreasing basis in the economic language, we say that the marginal returns are decreasing. After a certain point, the marginal outputs become negative and the total output may become zero. At this stage, the additional inputs of labour and capital were not only wasted but were actually harmful to the soil (in the light of the biological facts outlined in an earlier chapter) for they result in lowering the total output. This is the explanation of the trend towards decreasing returns. And this trend is based on common sense. What it means in ordi

nary language is that it could not be assumed that by doubling input we could also double output; if we double the amount of the seed, the farmer knows that the output may not be doubled and similarly by expending double the sum on equipment he could not double the amount of the produce from the farm. This is a physical phenomenon.

Economic Explanation. By expressing the physical output and input in monetary terms, the law could be translated into economic terms. Thus the financial and monetary series of investments, inputs and outputs could be found out and the law borne out, but that would not change its character, although it may mean a retranslation of the law in monetary terms. The marginal input of a factor of production is compared with the marginal output or return of that factor. And when we initiate this comparison, we find that the ratios go on declining. *Optimum intensity* of cultivation is reached at the point of equilibrium, where the cost of the marginal input is just covered by the value of marginal output. A higher intensification of cultivation would be not remunerative, for the cost of this additional input may be much higher than the return obtained from the marginal investment. A lower intensity of cultivation and input would fail to earn a maximum profit: that is why this point is known as the point of maximum output or the optimum point. The optimum in respect of any single factor is known to the farmer by his own experience. The optimum degree of intensity of a productive factor which is used in combination with another factor or factors is reached when the cost of the marginal input is equal to the value of the marginal output. The farmer has to reckon with this trend, not in respect of the different factors of production, but also in respect of the different farms. He does not weigh the profits gained from one single enterprise only but from a number of them; this means that he has to deal with farming as a whole. This further complicates the problem for it extends the application of the law to the whole field of economic enterprises in the charge of a farmer. He would distribute his resources in such a manner that the law of diminishing returns is not permitted to bring about a greater loss to his enterprises as a whole. He might increase his investment in an enterprise where the gains are high and decrease his investment in other enterprises where these are low, *i.e.* where the decreasing returns have set in. We shall have occasion to advert to this analysis in another section where we analyse agricultural costs in relation to their outputs, but it may be emphasized here that the law is operative in the cost-output analysis too. When the crop is being produced under the conditions of decreasing returns, the farmer has to be careful about this trend which cautions him against an intensification of cultivation. The practical point to appreciate is that the last additions to high-yielding crops tend to cost more than do the initial increases; and the farmer should be careful that he does not pass the point of optimum production. The advent of the law of decreasing returns is a signal that this point is near. The com-

mon belief that high production means low costs per unit is not always true in the light of this analysis. In both livestock and crop production the farmer, in contrast to the industrialists, is not able to increase the produce by increasing the inputs for then the law of decreasing returns may nullify his efforts and the increased produce may only be secured at a higher cost per unit. There is, therefore, much less scope for the expansion of agricultural output than for the industrialist to increase his output. The farmer would, in the circumstances noted above, tend to produce a better and more remunerative combination of the various types of farm product in order that he may be able to offset the law of diminishing returns. Still, it may be pointed out that a low cost and high yield are not the only ends. They are just the means to another end. The farmer's final concern is with the contribution that each enterprise makes to his profits as a whole. On a strict *accountancy* basis, the enterprise may show loss still it is worth while from the farming point of view as a whole. If it is a complementary enterprise the farmer has to continue on with it for the simple reason that it would be very essential for the success of the major enterprise and make that one a more paying proposition. But if it is a supplementary enterprise, the contribution that this can make is to help in the reduction of the costs of running the other enterprises. Economic efficiency, therefore, does not depend on the law of diminishing returns, nor does it depend on efforts to set the law of diminishing returns at naught. Economic efficiency is measured by the amount of utilization of all the factors used in the process of production or in the terms of the total output of the farm as a whole as a function of the combined costs of total inputs used in various enterprises taken as a whole. Thus the practical application of the law of diminishing returns is limited.

Forms of the Law It may be of interest to note the various forms of the law of diminishing returns. There is in the *first* instance the law of *total* diminishing returns, which means that the total returns begin to diminish, this point being reached when the marginal returns have fallen to zero, for as long as the incremental returns accrue the law of *total* diminishing returns does not operate. The position indicated by the point where the total returns or the total output begins to fall off to negative quantities, the diminishing returns are a marked and absolute fact. This point may be reached in the farming or the cultivation processes. *Secondly* there is the law of *diminishing marginal* returns, this is the law usually spoken of in economic analysis. This law only provides a comparison of the input output ratios on the incremental and marginal bases. The point zero may not have been reached but the returns may have begun falling, this means that the optimum point has been crossed. The *third* form of the law is the law of *diminishing average* returns, this law is a statement of the trend of average output or returns which begin falling. This is what the average farmer calculates, for calculations based on marginal returns of crops

could only be made with great amount of effort and may involve more accurate calculations on the basis of the accountancy methods. The total diminishing returns give an indication of the unprofitability of the enterprise as a whole, and this point will not be crossed even by the most daring of the farmers, for that will bring about a total collapse of investment, which is likely to become completely unremunerative and the return quite unprofitable. Marginal returns when they begin to decline, give a warning to the more conscientious and calculating farmer, who is maintaining records and accounts of the enterprise that he has undertaken. This point is worthy of consideration, and is the *optimum* in the farming business. The third point, the point of diminishing average returns, though reached a little later than that of diminishing marginal returns is the one which could provide an indicator to the farmer, of average intelligence, who wants a rough and ready measure of the best utilisation of his investment. No doubt, this will, theoretically, not be the correct indication, but still it is a measure of great practical value and a utility to the average farmer.

Assumptions and Limitations. There are certain assumptions underlying the laws. The *first* is that land is already being used in the best possible manner. This implies that no more experiments in the matter of selection of crops and lands and their mutual suitability have to be made. The farmer knows how much he has to produce and on what lands and of what crops. Cultivation is carried on in a satisfactory manner approved by the farmer. Adequate amounts of labour and capital have already been sunk in the farm business to the best advantage. It is possible that a particular piece of land is under-cultivated, that is that plot may yield not diminishing but increasing returns. Hence the allied assumption is that land has been used to the best possible advantage and in the best possible manner. Another one is that agricultural skill and knowledge, technique and methods of cultivation remain the same; there is no new discovery which may improve the methods of cultivation, nor is there a possibility of the same while the cultivation process is on; this implies that other things remain the same or the law is 'working only in the *static* state. Nor is there any new discovery of new resources, or any other scientific discovery and improvement in the matter of technique. If a new invention or change is brought about the law may fail to apply. With greater application of technique and science and to the sphere of agriculture, the law is held in check. Still, it may be pointed out that the operation of the law is not completely stopped, it is merely suspended; the tendency is there but the law is only overcome with increasing application of scientific and technical advancement. It has to be conceded that these bold assumptions may be conspicuous by their total absence in the sphere of agriculture. It is not a fact that land is already being used to the best advantage, for that is quite an impossible thing, one could never say that the present usage of land is the ideal one. And the second assumption that other

things remain equal or that there are no other changes in the scientific process or in the agricultural technique, is also one that does not actually operate in the present age, when the pace of scientific progress is most rapid. Hence to assume that the other things will remain equal and unchanged is to assume something impossible. Agricultural progress is at its height and technical progress in the sphere of agriculture, rapid indeed. Still, regardless of these assumptions, the law does not operate due to the existence of certain factors that may be noted now. In the first place, improvements in the methods of cultivation may nullify the law. As pointed out above, these improvements are being fast implemented by the agriculturist today, for he is more wide awake to the nature and character of technical advancements that are being brought about in his sphere. Rotation of crops, improved seeds, modern implements, and the like may explain why the operation of the law has been suspended. It is pointed out that the niggardliness of nature must, sooner or later, assert itself though in a latent design, thus proving that the law does operate though in an invisible manner. The second limitation is with regard to a better assortment of labour and capital which the enlightened farmer now utilises, this tends to neutralise the trend to diminishing returns. Hence to say that the farmer would not be on the look out to adopt more progressive and fruitful assortments of labour and capital units, is to suggest something unworthy to expect of even the most negligent, careless, uneducated and unprogressive farmer. Hence, the common rule seems to be that the farmers are on the look out for the adoption of better and more progressive combinations of agents of production. Again, on new soils the law is unable to operate, for virgin soils when brought under the plough, will obey the law of increasing returns and not that of decreasing returns. Virgin farms have better stores of nutrients of plant food, provided to them by nature; hence, they are better fitted to produce more than proportionate returns and would not let the law of decreasing returns operate on their soils. In the prospective sense, the law may not operate. Another limitation that may be pointed out, is that the law may also be inoperative if resources are obtained at a lower and a lesser cost, for the law, viewed from the cost point of view, is the law of increasing cost. With increased possibility of obtaining the raw materials of production, at a lower cost, the trend may not result in increased cost.

Application to Farm Enterprises Applying the law to agricultural enterprises, we take cultivation first. Cultivation could either be intensive or extensive. It would be intensive, if an increasing use of the doses of labour and capital is made. Detailed analysis of the law of diminishing returns was made above in the light of intensive cultivation. And the same is not to be repeated here. It need only be pointed out that the last dose of labour and capital, which it is thought just worth while to apply, is the *marginal dose*. In regard to the law in its application to extensive cultivation, the point that needs to be emphasized is that the

supposition is that the farmer cultivates the best lands, considering both fertility and situation. With the expansion of his enterprises, the farmer goes on taking more and more lands, presumably of inferior types. The law of diminishing returns applies in the matter of reducing the additional output from these inferior lands with the same doses of labour and capital. The land whose produce just covers additional expenses of cultivation is termed *marginal land*: where the farmer stops further extension to cultivation units, he already has. The law of diminishing returns operates, when cultivation is extended to inferior lands and output or returns decrease with further additions to the units of cultivation. We shall have occasion to talk at length about "marginal land" and "margin of cultivation" below. In the discussion, above, the reference is to the quantity and not to price, for while the quantity has decreased, (thus establishing the operation of the law) price may have risen and that might give a wrong impression that the law is inoperative. The law also applies to various agricultural operations. In fisheries, the available supply of fish is limited, hence a point is reached when an increase in investment in fisheries may only yield a diminishing return, *i.e.* a diminishing rate of the catch. But this refers to the *cultivated* and *maintained* fisheries, for in the high seas, the total supply being unlimited, there may be no such tendency. In regard to cattle enterprises, the law betrays a limitation which arises out of the inability of the cattle to respond to an increased investment by yielding a greater quantity of milk and other cattle products. And also, in another way, an increased investment in the cattle enterprise would only be non-remunerative after a certain point because of the fact that this might become unmanageable, too. In the horticultural enterprises, close planting may also result in decreased output, while too much application of the fertilisers to fruit trees may yield less.

Counteracting the Law. The question that may be interesting from the point of view of the farmer is whether the law could be counteracted or not. It can be said that the law seldom operates in the form in which it is theoretically stated, it is in a modified form that the law applies in the farming world, otherwise if the law had operated in full strength, the price of the farm products would have always been on the upgrade. The fact is, as pointed out above, that the law has only a limited application. This is because of the assumptions of the law not holding good and also because there are several limitations operative on the law. But apart from these considerations we can also so manage agriculture that the farmer could steer clear of the law. The law can be nullified and this has been done by farmers and scientists. Anything which improves the quality of land and any step that adds to the value of the yield (not in terms of prices) in point of the quality of land goes to check the operation of the law. Better methods of tillage, the use of scientific means of cultivation and the application of modern technical

knowledge, all these methods go to check its operation. In short, scientific cultivation, can by itself check the law. In the West, particularly in the U.S.A. and Soviet Russia, the operation of this law has been effectively suspended due to the improvements in the methods of cultivation and in the means of transport and communication (which keep the farmer well posted with all the latest in the science and technique of agriculture) and the extension of marketing facilities, all these things have held the law in abeyance. In fact, it is being doubted if the law of diminishing returns is at all operative, in the modern world.

Importance of the Law The law of diminishing returns is the basis of a major portion of the economic analysis. It is responsible for the doctrines pronounced by Malthus and Ricardo. The *Malthusian theory of population* reached its dismal conclusions in the light of the analysis offered by this law. He was able to say that population increased faster than the food supply on the bases of two premises, in the first instance, he was struck with the fecundity of human beings and secondly, he was impressed by the law of diminishing returns. But the Malthusian theories stand disproved and discredited, this is because the law of diminishing returns does not operate with the same intensity, as Malthus imagined. Ricardo also based his *theory of rent* on the conclusions of this law. His assumption was that inferior lands had to be cultivated because the law of diminishing returns operated on superior lands. The margin of cultivation descends and rent rises. We shall presently discuss these two points in the next paragraph. It is a fact that the law of rent as enunciated by Ricardo is not accepted by modern economists. Again the *theory of distribution*, as understood even now, is largely based on the superstructure of this law, for the theory of marginal productivity is based on the diminishing productivity (returns) of the respective factors of production. The law of diminishing returns occupies a very important place in economic analysis. Similarly in the field of agricultural analysis, the law still occupies an important place, for the simple reason that its application is mostly with reference to the sphere of agricultural activity, where land (a major factor of production) is limited and where the exhaustion of the factors of production is rather pronounced. In view of its general acceptance the law is very pertinent to economic and agricultural analysis.

Margin of Cultivation Because of the operation of the law of diminishing returns and also due to its heterogeneous qualities there are many grades of land. For the sake of convenience and in order that we may be able to group them in a manner useful from the analytical point of view, lands have been categorised into three classes *sub marginal*, *marginal* and *super marginal*. This classification is with respect to cultivation and production of land. Land is *sub-marginal* with respect to the production of any particular commodity, if it is not so productive, i.e. when the value of the output obtained therefrom

does not cover costs of the input in land. The sub-marginal lands, will, therefore, be of no use to the cultivator, at least, from the strictly economic point of view, but from other angles, this will be of use from the subsistence point of view. The *marginal* lands are those which are just able to cover the cost of the input with respect to the yield from a certain crop or enterprise, from that particular angle. The *super-marginal* lands are those that more than cover the costs of the input (the costs of production) in respect of certain crops. It may be pointed out that the above classification is not static, but one that changes with respect to different crops, persons and farmers, undertaking production and also with different price-levels. What may be super-marginal in relation to one crop may prove to be marginal or sub-marginal with respect to another crop. Similarly, a super-marginal land in the hands of an efficient manager-farmer might be submarginal with another man taking up farm management. Also the changes in the relative price-levels might bring about changes in the above categorisation, for if the prices of wheat fall considerably the lands under wheat cultivation might fall into the submarginal category. Also any economic changes which influence and affect the cost levels of the inputs or the price levels of the outputs or both will affect the classification. In economic terminology, margin of cultivation shifts in the case of any of the above-mentioned changes taking place. Again the influence of changes in the accessibility of markets on the margin of cultivation is also significant. The growth of railways and, later on, the development of the means of mechanical and automobile transport also shift the margin of cultivation; these factors convert the so far sub-marginal lands into super-marginal lands. Thus the margin of cultivation is a concept which we shall frequently come across in the agricultural analysis.

Rents and Profits. While in the ordinary speech, rent means the periodic hire charges, in the economic terminology it means something very different : it refers to *differential surplus* that the super-marginal (in the above context) lands earn over the marginal lands. This differential surplus which the marginal lands enable the super-marginal lands to pay is *economic* rent. It may be pointed out that from the point of view of pure theory, the marginal lands do not pay any rent, while in actual practice, even the submarginal lands pay rent, this is due to the fact that lands are very scarce, and there is a great demand for them. On account of this fact of scarcity, *sub-marginal* lands pay rent. Rent arises because of the unequal distribution of different grades of lands and other natural resources between various places and countries. Rent, in the economic sense, arises because of the *original* and purely *natural* advantages, which super-marginal lands possess in regard to fertility, situation and any other such natural gift. It is due to fortuitous advantages completely outside the purview of the farmers, that economic rent arises. The conception of rent is a reflection of the differences in the economic

advantages which certain lands possess in respect of natural gift. In respect of the element of scarcity, the question of economic rent does no longer remain, it is scarcity rent that is important and relevant and we should learn to distinguish between economic and scarcity rents. It is with economic rents that we shall be concerned in this book, not with scarcity rents, in particular, though a passing reference may be made to scarcity rents, too. Rent has to be distinguished from profits which are not the result of natural forces. Profits are the result of varying abilities of the entrepreneurs some of whom, having superior ability than others, could reap a much greater advantage than others and even convert the submarginal lands into the supermarginal ones. This differential earning is due to the inherent abilities of these men to judge matters rather closely and make correct anticipations.

LAND MANAGEMENT

The problem of land also requires to be tackled on management level. This section is to be devoted to the solution of the problems of land usage, the conservation and maintenance of land and other management issues. Land is an important part of the economic wealth of a country and it is, therefore, imperative that land is used to the best economic advantage. The use of land is considered with special reference to its productivity and the conflicts of its usage. In regard to the maintenance and conservation of land, (another management issue) we have to point to the best ways of doing these and utilising the same. What is to be done to submarginal and unproductive lands is also discussed in this section, for all lands in a country could never be the super marginal lands, there would always be the sub marginal and the unproductive lands which do not pay their way and which if not managed in an efficient manner may be a drain on the resources of the country. The major management issues and problems that are of a general nature will also be discussed to see how these problems find their solution under various economic considerations. Most problems relate to cropping systems which should be such as yield maximum results in agricultural production. What is aimed at, (let us repeat) is the maximum long run average productivity. This involves us in a reconsideration of problems connected with fertilisers, farming, erosion and general improvements. All these issues are of moment to agriculturists and farmers. The management issues in land economics are of great importance, for the simple reason that land is the only factor of production that is scarce and irreproducible. While other factors of production could be had, either from the market or by the process of reproduction, the significant fact about land is that it is not at all reproducible. It is fixed in quantity both from the national and the individual point of view. Economy in the use of land is the most desirable thing to do. Without effecting this economy, things would

be in a mess, for no nation could afford to waste its land resources in particular, and the natural resources in general; these have to be very considerably used and economised. Another reason is that land being very heterogeneous in quality and grade, the aim of land management is to upgrade inferior qualities and grades, so that the sub-marginal lands could also become as productive as the superior ones.

Usage of Land. In Land Economics, the most important place assigned is to the use of land, for land is scarce and great discretion is to be exercised in respect of land usage. A wise use of land would go far to conserve and maintain it as such while an indiscriminate use of land would ensure its speedy deterioration. The usage of land is also important for a discriminatory usage would ensure maximisation of its productivity, while a bad and indiscriminatory use would hasten its impoverishment. In this connection, attention has to be paid to the factor of productivity and the efficiency of land. In regard to productivity the various factors responsible for this are a good amount of the fertility of land, which could be increased by the application of more and more fertilisers, but only up to a certain limit, that is set by the law of diminishing returns. Productivity of land also depends upon the other input factors like the irrigation facilities and the equipment available for land. This is what determines the productivity of land. Another relevant fact is the preservation of its productivity achievable by means of good management, which preserves productivity at the same level and also improves the same. Management should be directed to the improvement of productivity. This could be done by the judicious use and selection of fertilisers, the suitability of the seeds grown and the special needs of farm lands. Productivity could be maintained by means of soil surveys, to give the cultivator some idea as to the suitability of the crops in the matter of the soils, for, the most outstanding fact in regard to productivity is that there is complete harmony between the crops and the soils. *Productivity* which we earlier defined as the resultant of capacity and efficiency of land, is usually measured per unit of area. But from the management point of view, this is rather not advisable for the tendency may be to assign too much importance to the area and the extent of lands. With the cheapening of power resources and the increased use of modern means of transport, the emphasis on area is ill-advised, it should shift to *man-units*. This suggestion amounts to saying that productivity should be measured in terms of net product from a certain piece of land, per man unit, or what one man can handle. In this context, we may also point out that the crop inputs, and land inputs, (defined earlier in this chapter) should also be considered. The farmer-manager must watch the depreciation and the appreciation of lands, though the land may not be so behaving absolutely speaking. These are matters relating to productivity. But this is not all. The use of land is also with reference to public and private purposes; we shall discuss the economics of land

usage below a full chapter will be devoted to the economics of land usage, for this is an important topic in these discussions. But in this place, we have to point out that public and private usages of land might conflict and in that case, the public use must have preference to the private one. Distinction needs to be drawn between the use of the land for farming and for mining. In the mining business, whatever is once taken out is never replaced while in the farming business, whatever is taken out of land is replaceable, for the use of the fertilisers restores to it the same nourishment as has been extracted even in the ordinary course of time, the geological and atmospheric changes would enable lands to get back the nourishment they have lost. Restoration of the land values and rehabilitation of the fertility go far in the matter of land economics. One more point to be noticed is that land absorbs all improvements that have been made on it, they become a part and parcel of it. This leads us to the next subject, the maintenance and conservation of land, which is also one of the management problems.

Conservation and Maintenance Conservation is the next in our

analysis of the management problems relating to land. This is obviously an extension of the concepts of land's depreciation and appreciation discussed in the last paragraph. In ordinary parlance, lands properly conserved may not depreciate at all. In regard to conservation of land the best thing possible is to neutralise depreciation by the means of appreciating it within a short time. We must understand clearly that land is not conserved for its own sake, but for the sake of the productivity of its resources from the national point of view. Even if the present use of land is foregone, that is only for the sake of ensuring some future use in a good and efficient way. The essential idea of conservation is that the present and the potential uses may be balanced in such a manner as to get the most out of it over a long range of time. Our formula enunciated in the last chapter applies here too, i.e. the maximum long run productivity. Accepting this principle for the conservation of land, the point that still remains to be thrashed is regarding the rate of present usage of land. No present uses may be looked into without an eye on the future ones. Still, land is not to be taken away from the present uses for the sake of satisfying the very distant and far-off uses in a remote future. But this problem is closely connected with that of the maintenance of the soil for conservation is more important in its bearing on the problem of maintenance and is also allied with it. The decision as to the level at which to maintain fertility and other natural resources of land, is to be made both at the individual and the national levels. The individual would take into account special conditions attendant on the farm and his own resources present and potential. The more extensive methods of cultivation are likely to be followed by the individual who has land enough and to spare. On the other hand, the farmer who has a lesser quantity of land than he requires would be well advised to build up the fertility of land or else distribute his limited land

resources in a manner so as to ensure continued fertility. From the point of view of the agricultural scientist and technician, the ideal should be one of maintaining the fertility of the soil at fairly high levels and also of conserving land. This means that lands must be very judiciously cultivated and the selection of the crops considerably made in complete harmony with its maintenance and conservation needs. There is the cost of maintenance, but the new technical advances have made it possible to maintain soil fertility at fairly high levels at a low cost. It may also be pointed out that these technical advancements are not very rapidly being adopted by farmers, who are usually slow to adopt these because of their conservative outlook. If the farmers only know how to maintain soils and conserve them at high productivity levels with low costs, the problems of agriculture would be automatically solved. And in consequence, the cost of raising crops and harvests would be considerably reduced not only in the immediate present but also in the prospective future. The great advantage of keeping land at high productivity (that is maintaining the land at that level) is that it then possesses a larger range of uses and could be more useful to the community than otherwise. Still, it could not be a matter of exact determination as to the level at which the farm may be maintained in regard to its productivity and fertility. Different intensities of cultivation would be major determinants of the rate of depletion of land, and in the converse of the argument, the selection of these intensities of cultivation would also give a clue to the maintenance and conservation of land. Another difficulty that one faces is that of not knowing what different land uses would prevail in the future. The farmer, ignorant as he is of the various economic trends, is unable to divine in advance the potential uses of land. The policies of maintenance and conservation are of great importance in land management.

Intensity of Cultivation. The next point that relates itself to the problem of land utilization is the intensity of cultivation. The question often arises as to which system of cultivation to adopt, intensive or extensive. The degree of intensity is determined by the *man-land-ratio* in the country in question. If there is land to spare, or the acreage of land high relatively to the number of the people subsisting on it, the intensity of cultivation has to be low, *i.e.* the farmer may adopt extensive method of cultivation. But if the *man-land ratio* is low, *i.e.* the amount of land available for agricultural purposes is not in very large quantities, the intensity of cultivation must be high or intensive form of cultivation has to be followed. This needs to be examined from the point of view both of management and economics. We shall think in terms of *physical intensity*, or the *intensity measure* in terms of input per acre. This is the usual and the common measure of intensity of cultivation. If more labour, capital, and equipment are being used per acre of land or if the physical intensity of land is *high* the system of cultivation is termed as **INTENSIVE CULTIVATION**. But if the input of all the

different constituents of investment doses is low as compared to land used, the system is termed **EXTENSIVE CULTIVATION**, or there is *low physical intensity*. *Labour intensity* means the application of labour units to land, while *capital intensity* is the number of capital units invested in land. The calculations in these two are with reference to the labour units and the capital units. A farm or an enterprise is said to be *labour intensive* if many are the labour units employed per unit of output and investment. Indian farming is labour intensive in this sense, or that it has more labourers working per acre, we also describe this phenomenon by loosely saying that the pressure of population on land in India is rather heavy. **CAPITAL INTENSIVE** farms are those which are employing more equipment per unit of land. *Capital intensive form of cultivation* is practised on the modern and mechanised farms in the West. But it is not essential that the labour intensive ones may be more productive in point of output, they may indeed be less *intensive* from this point of view. Also, it may infrequently happen that too much of equipment on the farm may not be productive of good and remunerative results. For our purposes, the intensity of cultivation depends upon *combined* units of input. It is to be gauged in the terms of physical intensity alone and not in terms of labour and capital intensity, though the latter terms convey a fairly accurate idea of the character of farming.

Sub marginal and Unproductive Lands We have already defined what is meant by the term "sub marginal" land. "Unproductive lands" are those that are unproductively used, just as the sub marginal lands are those that have been so tilled. Even the *sub marginal* land would, under inefficient farm management turn *marginal* and *super marginal* land. Similarly, the superior lands would lose in productivity. Again, the sub marginal lands could be converted into the marginal and the super marginal lands if properly used by an efficient farmer. These terms have only a relative meaning, relative to the use of land. The problem posed here, is that of converting the submarginal and the unproductive lands into the super marginal and productive ones. The submarginal lands do not yield any net product or net profits, while the unproductive ones are regarded as pure waste from the national point of view. Sometimes these lands are termed by the experts as *problem areas*, i.e. those areas which present problems to the experts. From the angle of technique, every piece of land has some use, the best from the point of view of economy as a whole. The "problem" is to find out which use is the best in the circumstances. Some other use of land may convert submarginal and unproductive lands to make them fit for the cultivation of land and good from the national economic point of view. Proper readjustments having been made, the "abandon" and "problem" lands are made fit for cultivation and thus productive in the economic sense. The actual and the present product of land depends upon the way in which it is being used at the present moment. A better and more remunerative way of utilising this land exists. Some

times, by a readjustment in the unit and the size of holdings, land could be brought under cultivation and become supermarginal in nature; and this is the problem that confronts most of the peasant-held land in India. Sometimes it is done by the introduction of mixed and diversified systems of farming. The point is that it is not correct to waste away certain lands by dubbing them as sub-marginal and unproductive. In this connection, the terms, extensive and intensive *margins of cultivation* are often used. They do not refer to the intensive and extensive cultivation systems, but have different implications. We speak of the *intensive margin* when we approach the problem from the standpoint of the last unit of input (that just pays for itself on a given type of land) while the *extensive margin* refers to the point where a piece of land will not use much labour and capital without incurring loss. The intensive margin starts where larger doses of input will not quite repay themselves, while the extensive one is where bigger investment is not indicated. Thus they are the two ways of looking at the same margin from different views. As Ricardo pointed out, the two margins of cultivation are in competition with each other for the peasants have usually the choice of applying more and more doses of input (labour and capital) to the various pieces of land in use, or of applying the same labour and capital to other lands in use. If the *margin of cultivation* is *extensive*, the input, when increased will not result in increased produce, but if the margin of cultivation is *intensive*, the farmer may, by following the policy outlined above, more than repay himself in his productive efforts.

Management Issues. Having grasped the essentials of the various issues above we now take to the discussion of the other management issues. Foremost are the issues of intensive and extensive farming: the farmer has to be careful about the choice of either. An intensive use of land means a high turnover of the plant nutrients, and exposes the soil to more erosion and oxidation of its organic matter. The problem of keeping the plant nutrients in balance comes to the fore, for the soil is fed heavily and produces crops also heavily. What is done is to plan a good rotation of crops: the nurse crops, the main crops, the nourishing crops; or any other system of rotation that the farmer may think advisable. In the case of different farmers, the choices in the matter of the system of cultivation that they would like to adopt would be in consonance with the needs of the farm in the light of the considerations advanced here. The fuller utilization of the various resources of the farm, e.g. livestock and farm labour have also to be reckoned by the farmer. The point to be considered is that the original store of plant nutrients is not decimated. Other facts, to be kept in view, are the market outlets that may or may not absorb the output, or only at very slow rate and low prices, or that the crops should not be grown in such excessive quantities as may depress prices or else be demanded on the farm for want of better disposal. There are the considerations

of fertilizers, tillage, erosion and land improvements With regard to the question of fertiliser, the farmer has to depend upon his own experience and judgment, or rely on the advice of the experts, he has also to take into account the fertilisers that he could provide out of his own farm, say farmyard manure Excessive application of fertilisers, beyond the capacity of the soil to absorb effectively, is bad for the land and also waste In regard to tillage, he has to see that the balance is kept on the farm The rate of turnover of the soil nutrients and the process of weed control are influenced, to some extent, by the farming process Tilling the soil makes it possible for the nutrients to reach the plants Wise tillage also helps the roots to penetrate to the ground and improve drainage Tillage issues are mainly technical ones, but have also economic aspects If tilling is undertaken on a superficial level, the power and labour requirements are rather small The requirements in the matter of fertiliser requirements are large at least after some time But the maintenance of the land may be ensured, it may deteriorate less rapidly Hence tillage system has to be selected very considerably Loss of humus is also of great relevance in this connection and this factor has to be weighed as against the other systems Sometimes, land may also *appreciate* when under grass and pastures In regard to *erosion* it may be stated that most commonly it is caused by water and wind The topsoil is eroded away by them The problem is that of balancing the different costs of the many erosion control methods against the losses arising therefrom and also choosing the most economical costs in this matter Costs have to be adjusted as these are often out of pocket costs and the money may have to be borrowed Data on the composition of costs, and on labour and hard work put in by the members of the family in this respect is very cogent in this matter Still, judgment will improve experience The problem of soil erosion should be tackled in a manner so as to improve the flexibility in crop production and crop rotation and make the system of farming more independent In regard to water erosion measures the objective is to get as much water as possible to sink into the subsoil and then let the excess run off without any deterioration of the soil by washing it away Grass watercourses and diversion ditches are provided for this purpose The farmer should choose that type of an anti erosion measure which is in keeping with the requirements of the slopes, soils, climates, crops as also the resources of the farm so as to maximise his income In regard to wind erosion, the problem is not a little different, although the essentials remain the same The farmer is well advised to resist breaking away the sods either during the process of ploughing or by his cattle, especially during the dry weather The measures adopted to combat wind erosion include strip cropping, leaving the crop residues, and are suitable methods of tilling, e.g. ridging the lands, and various water spreading devices In regard to *marginal* lands, the farm operator has to caution himself against the alternative of not bringing the land under cultivation, but reseeding it with grass

which is another way of fighting out erosion. This is an improvement problem.

Land Improvements. Land improvements are of two kinds : those which require long-term investments and those which do not. The long-term investments relate to clearing, levelling, draining, irrigating and developing woodlands. These improvements do not depreciate rapidly, or even completely. With proper maintenance, they continue to yield an income indefinitely. The farmer must anticipate his income from the farm and balance it to investment made. The present worth of these improvements could be found out by a procedure very similar to the one adopted for buildings. Such improvements have also to be analysed from the viewpoint of farm as a whole. In certain cases, these problems simplify greatly the problems of planning cropping systems and reducing fencing costs. Tracts of land repay the cost of improvements. On farm lands, which are new, farming should be combined in a manner, that the lower-grades do not have first to be improved in order that enough tillage land is provided on the farm as whole. Many farms could produce for the family only if additions are made to already existing lands by clearing and ploughing the arable waste. An important aspect of the major problem of land improvement is that of the conservation of water and its retention in the sub-soil. Without this initial prerequisite, the other improvements are nullified. The problem lies midway between that of anti-erosion measures and making land improvements; but strictly speaking, it is the latter. If water is retained in the soil, it becomes fertile and retains humus, an important constituent of fertility. In the matter of specially arid and semi-arid zones, the problems get to be more pressing. Three methods are in vogue, that of liming and pasturing, that of mixing the grasses in better proportions and that of contour-ridging. The farmer has to be specially selective of the methods of conserving water. Among other improvements, mention may be made of the short-term one. These improvements may be necessitated by urgency, for while the long-run improvements may be more costly than the short-term ones, they are cheaper in their incidence on the farming systems. These may relate to the liming process and the measures adopted to fight out the temporary erosion problems. The temporary and short-term measures of land improvement are indicated only when the urgency of the same is established and also their indispensability. The farm operator has to be judicious about these.

NATURAL RESOURCES AND FACTORS

Turning our attention to natural resources and factors in their bearing on the farming problems, we have to re-assess their relative values. Natural resources and factors are of two types : those which are under the control of Man and amenable to improvement effected by him and those which are not amenable to his control. In the first category fall such factors as climate, rainfall, geological

structure and the location of land. Climate and rainfall are absolutely outside the control of Man, and they could only be compensated for by various measures adopted in the shape of the extension of irrigation facilities and glass house culture. But it has to be borne in mind that the various measures of this type are rather costly and require a great amount of effort on the part of the farmer. In the second class, fall such factors as soil structure, topography and slope of the land. Most of these could be improved upon by physical exertion. It has to be recognised that those measures that are adopted to improve natural resources and factors, are very common, these are the measures that are designed to improve land. Still it may be pointed out that original properties of the land are of great importance, for howsoever much Man may try to improve land and its natural properties they can not compete with original properties as such. Hence it is that natural properties are of great consequence and moment to the agriculturists. No doubt efforts are being made to conquer nature and to improvise such measures as may bring about artificial rainfall. We have to admit that these measures are still in the laboratory stage as they could not be popularised because of the costs involved. We shall examine these natural factors and see how they could improve the system of farming and also how the farmer reacts to these natural measures. A word more regarding this, Natural resources help agriculture, no doubt, but in the event of a super abundance and luxuriance of the natural resources, the initiative and incentive of Man to work harder and get the fullest out of these natural resources is much damped and he remains at the same stage of development as History found him. On the other extreme, we find that in the case of nature being too stingy, Man finds himself helpless to go ahead with the task of rebuilding society on civilised lines. Examples of the over indulgence of nature resulting in the backwardness of the communal types may be found in the case of the "pygmies" living in the super abundant natural environment. The other extreme, that of the rigorous imposed upon Man by Nature, is typified in the case of the Eskimos, who are very backward.

Topography Foremost among the natural factors is topography. From the standpoint of farming, this factor has great importance. Various other factors such as the location of the land, its slope, the local variations in natural factors available to land, all these are of considerable import to the farmer. The farmer is much concerned about these and has to see to their relative significance. In the event of good and favourable topographical factors as in the case of natural factors of varied types the success of the farming business is ensured, for then the enterprise is in harmony with natural environments. Topography is more important, than even the broad impact of geography for its say is of greater and more intimate nature than the influence of other (uncontrollable) factors of a distant nature. Topography concerns itself with local geographical and (natural) environmental factors. And these

local factors are of superlative relevance to the farmer than other distant factors. It is, no doubt, possible for the farmer to influence and modify some of the topographical factors, but that game is expensive for the individual as his means are limited and the effort and its cost enormous. But it is possible for the community (by devising suitable policies) to alleviate the hardships imposed by topographical factors, at least some of them. The locational factor could be improved upon by planning transport and communication services and the planting of new townships and markets in places suffering from environmental handicaps. In regard to the local variations in point of rainfall and weather cycles, the farmer and the communal agencies may also find themselves faced with insuperable difficulties. Slope of the land, the direction of the winds, the routes of the waterways, all these facts influence the farmer in his routine of farming, but he often finds himself helpless to surmount them. That is why topographical factors are of superior importance. In this matter, the reader may remind himself about the observations made about the selection of a farm by the tiller and the entrepreneur; we said that the topographical characteristics were of great significance in deciding upon the value of a farm and its selection by a farm hand. To categorise the topographical factors into the two classifications referred to above is rather valuable for the simple reason that both the controllable and manageable and the uncontrollable and unmanageable factors are included in this list.

Climate and Rainfall. The next in importance is the character of rainfall and climate of the region under consideration. Both these factors are of immense relevance for the simple reason that it is not possible to bring them under the control of Man and under his management either. Too bad a climate is as unfavourable as a too-favourable one, for while in the former the initiative of man is killed by its extremes and the efficiency of agricultural work much reduced, in the latter event, the indulgence of climatic factors spoils Man and he does not have an incentive left to better his way of farming. Climate depends upon some other uncontrollable factors like altitude, the direction of mountains and winds, the distance from the sea and the afforestation round about. All these factors are of natural variety. On climate does depend the nature and type of cultivation and the success of the processes of tilling. Crops grown in an unfavourable climate would not be productive of the efforts expended on them, while those suited to the climate need not be victims to such hazards, for given a good care, they thrive and prosper in the climates favourable to them. Some crops and fruits are specific to climates and may not tolerate any other. And this is usually the case, notwithstanding scientific advances registered. Farming is not the same thing as glass-house culture and could never be run on identical principles, hence the paramount importance of the factor of climate. Rainfall is an important constituent of climate and has to be reckoned with separately for the importance it possesses in the matter of agricultural production is inestimable.

No doubt the deficiencies of rainfall are very much compensated for by the initiation and extension of irrigation facilities, but it is also a noteworthy fact that all lands are not accessible from the standpoint of irrigation, irrigation may well nigh be an impossibility in several lands with unfavourable slopes, or those situated far off from the source of the irrigation works, or lacking in respect of under ground water.

It is, therefore, an inescapable fact, not to be lightly treated, that irrigation facilities could not be depended upon for the deficiencies of rainfall in respect of certain lands, at least. Efforts to increase the amount of rainfall by artificial seeding of the clouds, have not so far succeeded and, as yet, are in the stage of experimentation. But in this connection, mention may be made of the impact of afforestation on the localisation of rainfall in a certain locality, and these have been successful, too.

The Geographical Aspect Having appreciated the basic natural factors in respect of farming, we propose to understand the impact of geography on the farming pattern. Though the saying that a country is what nature has made it, may not be cent per cent true of the economy in general but it is generally so of agriculture. Systems of farming are in the main dependent on the complexion of the geographical factors that are in an effective manner influencing the agricultural pattern of the country. What crops will be cultivated by farmers in what region and what their expected yields are, all these are functions of natural geography. These factors influence farming operations in ways more than one. In the first instance, their impact is to the extent of the area suitable for the cultivation of different crops and the various operations that may be possibly undertaken on different lands. The extent of the area under different crops has a direct bearing on prices necessary to bring forth a supply, which in turn, has an influence on the price of different agricultural commodities. Due to this factor the distribution of certain (given) crops takes place in certain regions some of which are more favourable for the cultivation of certain crops, while they are less favourable for the cultivation of others. The general rule seems to be that in the event of competing crops, prices are such that the one with the more limited potential area will have its choice of territory. Its area will expand in spite of the less favourable conditions of production until neutralised by the mounting production costs which prevent further expansion by favouring other competing crops. This formula holds good in general and is of a great and diverse application. What is stated is an interplay of economic and geographical factors, the crop that suffers from natural and land limitations for potential cultivation may further expand its cultivation, because of the encouragement provided by the factor of higher price obtained for it than for the other crop due to the inability of supply to meet demand. This ignores the demand factor, an important determinant of the crop distribution in the geographical set up. Variation in soil and climatic conditions make certain regions more suitable for raising certain crops than for the culti-

vation of the others. Again, crops also compete with regard to seasons, for several crops may demand the attention of the farmer in the same season. Again the selection of the crop is usually on the basis of the interplay of the twin factors of season and price impacts. Also, we have to note the influence of the geographical factors on the place of livestock in the farm organisation: the livestock industry requires large areas for the pastoral and fodder crops. Much of the pasture land is situated in the arid, semi-arid and mountainous regions, not suited to arable cultivation. This, therefore, determines the location of pasture crops and indirectly the place of the livestock in farming. The impact of geographical pattern on agriculture is immense.

Physical Composition. Next in importance may be ranged the physical factors, which are of incalculable importance to the agricultural set-up in the country. These factors include structure of the soil, place of the subsoil water, power of the soil to grow crops and retention of the moisture for agricultural purposes. The soil structure could, however, be improved by the application of suitable and appropriate fertilisers and nutrients, but the fact remains that natural advantages far outweigh others created by artificial means. In the case of good soil structure, the arability of the land is considerably increased for the effort expended by an operator is much less than otherwise expended in preparing the soil for the seeding and the cultivation of crops. The water-logged lands are not only unfit for cultivation but also for livestock enterprises. Hence the structure and the suitability of the soil has great bearing on the pattern of farm enterprises. Physical factors, like the composition of the soil, are also in this list. It may be pointed out that soil composition has a bearing on its fertility and could be bettered only with a certain amount of effort. Among other physical factors is that of afforestation in the vicinity; we know how this is responsible for the localisation of rains and that great efforts and huge expenses have to be incurred on afforestation programmes. Other physical factors relate to the course of natural waterways, for they are important from the standpoint of irrigation. The slope of land and farm is also in question when we discuss the importance of the physical and such other factors in the matter of farming enterprises. The nature of the flora and fauna in the vicinity has also a deep influence on the nature and character of farming enterprises. In the chapter, FARMING ENTERPRISES, we made pointed references to the impact physical factors have on farming enterprises and at this place it may suffice to point out that this impact is inestimable. It is not the physical factors that have to adapt themselves to the whims of Man, in charge of the farm work, but it is the other way round: farming enterprises have to adapt themselves to physical factors.

The Biological Factors. And before we conclude this section on the effect of natural influences on the pattern of farming, we have to point out that biological factors have also an important bearing on agricultural

types We may recall the process of plant growth and the part played by the aerobic and the anerobic bacteria in the composition of the plant, its growth and developments suffice it to observe here that the biological composition of the soil and the subsoil is a determinant of the process and the character of this growth process, too So much about the life of the plants as influenced by the factors of biological types under the soil In the matter of the assimilation of manures and fertilisers by plants, the biological factors also count for the assimilation of the "decomposed" manure by the biological organism, if completely and efficiently done, will ensure speedy and good plant growth, but if haphazardly done, plant growth is often of a defective nature Again the *overland* biological life may be helpful or destructive to the farmer Several weeds and microbes may flourish on land, with the result that the crops grown may become the victims of pests and the parasites on the land Above the soil there may be locusts who may eat away the crop thus impoverishing the farmer to a very great extent, while there may also be the friends of the farmers, who may prey upon these harmful species Thus the nature and content of biological life may be potent in spelling the success or the failure of the farm enterprises, and the farmer could not ignore them

SUMMARY AND CONCLUSIONS

The topics covered in this chapter are of very great significance to the farmer and the natural agricultural economy We started the discussion with the definition of the term 'land' and saw how its meaning extended to the inclusion of the natural resources of a country Certain natural factors, like fertility and location, irrigation and drainage, were selected for this preliminary study, in order to bring out, at that stage, the relevance of this study to the problems of agriculture Next, we addressed ourselves to the functions of natural resources and land, as also the characteristics of the same The economic aspect, the most important section from the point of view of this dissertation, ranged next in our discussions Starting with an analysis of the factors responsible for capacity, efficiency, input and output of the farm lands we switched on to the understanding of the problem of land and appreciated how capacity and efficiency were the twin dimensions of farm productivity Assessing the value of land, as in agricultural production, we discussed the law of diminishing returns which is considered to be the most basic and universal explanation of the economic trends in the sphere of farming, we mooted the explanation that the law offers in the way of economic trends on the farm as also the limitations and the assumption underlying its operation We found that the law is a very long term trend and that it is rather a static explanation of the farming business The trends shown by the law could be counteracted by the modern system of farming The concept "margin of cultivation" was also explained with reference to the agri

culture of extensive and intensive cultivation. A distinction was drawn between the two payments, rents and profits, as this distinction was considered essential to the understanding of certain problems, discussed in the next section. As an introduction to the management problems in relation to the farm land, we made a passing reference to the various uses of land, though we intend to discuss this problem threadbare in the next chapter. The issues facing the farmer-manager in respect of maintenance and conservation of the soil were the next to receive attention, practical suggestions were offered for the solution of problems. The proper utilisation of the sub-marginal and the unproductive lands by the farmer and the public authorities was next discussed. In the event of a proper utilization of these lands, the national resources in respect of farm produce could be considerably raised. Other management issues, relating to anti-erosion measures and the provision of fertilisers by the farmer were also discussed in a manner so as to help the farmer. Land improvements, both long-range and short-term, were also examined in the perspective of the repayment and contribution made by them to the system of farming and the agricultural systems and the costs attendant thereupon. The next section dealt with the bearing of natural resources on the pattern and character of the agricultural economy of the country. The factors selected for detailed examination were topography, climate and rainfall, geography and the physical and biological factors. Not that an original contribution was made to the main argument, but it was restressed that the natural factors and resources were of prominence to the successful pursuit of agriculture, and could hardly be ignored in the analysis. In *conclusion*, it may be said that the outstanding moral of this chapter is that land is of utmost importance to the successful operation of the agricultural enterprises, for without land the very initiation of these enterprises is well-nigh impossible. And another lesson is that land is the most important single economic agent of agricultural production, in fact more-important than even natural resources for the price of land or its rent includes the provision of the other natural resources.

ECONOMICS OF LAND USAGE

Acquiring Land—Free Land • Settlements Gifts and Inheritances Savings and Credit Personal Factors State Policy Land Usage—Productivity and Conservation Maintenance of Land Output Input Relations : Optimum Level of Productivity Non productive Uses Problems of Usage—Turnover and Returns Fertilizers and Nutrients Erosion by Water, Wind and Sun : Land Improvements and After Land Under Cultivation—Intensive and Extensive Forms Their Economic Implications The Sub marginal Lands : Unproductive lands Supply of Arable Land Public and Private Uses—Scope of Public and Private Interests Grounds of Conflict Maintenance of Soil Resources : Population and its Pressures Price Cost Relationships Technique and Profitability Land Management Land Retirement Urban and Rural Uses—Impact of Industry Ruralisation of Industry City Farming Ranges Housing and Recreation Summary and Conclusions

The economic aspects of land usage are very pertinent to the inquiry into the principles and problems of Agricultural Economics for the proper usage of land does make all the difference to scarcities in the sphere of agriculture. Land is used for various purposes, though the most important use is for cultivation. Still, with the growth of the welfare state, and the change in the consumption habits of the people, land is being increasingly used for purposes other than agriculture. When the only use of land was for the cultivation of crops and not for anything else, and when other needs of Man had not found ample recognition among statesmen, that was the time when the agricultural use of land was the most important, now of course this is no longer so, for the needs of the people, industrial, recreational and housing have found recognition among leaders, and the "other uses" of land are of increasing importance. With increasing importance and prevalence of synthetic foods and their popularisation, the needs for farm grown food is not so imperative as before. In this chapter, an attempt would be made to probe into the various problems arising out of various uses of land and the conflict that arises out of the uses of land by the public and the private agencies. The subject is of importance from the point of view of welfare economics for proper utilisation of land, which in most regions of the world is scarce, as an essential prerequisite to the betterment of the agricultural system in the country. But this would not be clear unless we found out what the farmers' means of acquiring land were, for without an understanding of this problem we may not be able to appreciate various conflicting land uses. The scope of this chapter, as outlined above in the synopsis, is fairly extensive and wide though the problems are all connected with those of land utilisation. It may also be pointed out that this has often been ignored though this fact poses rather an important problem.

ACQUIRING LAND

As indicated in the last paragraph, we discuss, in the first instance, the problem of acquiring land, for it appears to us that this is the most elementary but the most important issue that faces that farmer, and to some extent also influences history of the utilisation of the land. If land is acquired in an easy manner, and the cost of acquisition, both in the monetary terms is not high, the farmer need not economise in his usage of land. He may also grow careless about it, for instance, where land is abundant, the usage of land in respect of farming and tillage is more often than not the use of it in extensive cultivation. It is with a view to understanding the implications of the effort expended in the acquisition of land, the other undergone in clearing it for the purpose of cultivation, that has an influence on the uses of land. It has to be pointed out that there is another consideration, too: that land is originally acquired for a specific purpose. When land undergoes the process of transformation, in course of time, the original purpose may be lost and the newer purpose may come into vogue. This change in the uses of land under dynamic conditions may come about in certain circumstances and is worth studying. Still another point that may be interesting from this angle is the tenure of land, how it has undergone a change and deviated from the original uses of land as such. For these reasons, the subject of land usage is of relevance and understandable only if we first of all understand the implication of the acquisition of land on the part of the farmer, for that is an important and indispensable background to the whole question. We study its various aspects.

Free Land. The first and the simplest means of acquiring land by the farmer is by taking into possession free tracts of land. In the newly settled countries, the vast tracts of land are available for cultivation purposes, free of any charge, only if the farmer bothers himself about acquiring land, clearing rubble and make it fit for cultivation purposes. In new settlements labour is rather scarce and land abundant and freely available for the purposes of cultivation. In this state of affairs, the only thing that the people have to do is to reach the land, clear it and build a cabin for themselves and their families and that would entitle them to the free possession of land, in fact as much as they would like to have. The first lands were colonised due to the convenience of their location and accessibility. But as lands became scarce, the movement of the new settlers was to the newer lands, which may be available. There was hardly any conflict in the public and private uses of land, or between the settlers themselves, for the first to come were the first to take possession of the lands and obtain all the advantages attendant upon the possession of the farmlands. But gradually the problem began to assume a different and complicated turn and the question of the limitation of these free rights also assumed some importance. Lands began to be sold, though at very nominal prices, for the State in the newly settled colonies was

anxious to see that the colonisation effort was not hampered in any way. In certain cases a pre-emption system was devised, by which preference was given to the actually settled farmers, who could own land at the minimum price in preference to the others. Though the quantity of land, which one settler might occupy at one time was also limited. This was in the general interest of the welfare of the people. American land history amply illustrates the various stages, by which free lands became lands for sale. The Homesteads Acts were passed by which the settlers were encouraged to acquire titles to land by maintaining residence on the same, it gave ownership to the occupants and lessened the chances of social and civil conflicts. At the present time, in no country of the world exists the free distribution of lands, for land is scarce in all the countries though to encourage the settlement of the newly reclaimed land the state or the reclamation authority may give land on practically nominally low rates or on very very long term leases and very nominal prices to approved and efficient farmers and other people of such means, but public title is retained or if transferred, it is on certain conditions and for specific purposes only.

Land Settlements It is in regard to these lands which are being offered for sale and use at very low prices, that we now turn our attention to. Mostly it is the unoccupied lands or that overgrown with weeds or brushwood that is under consideration of the national governments that may be offered at such low prices. The price sounds cheap for the first impression that one gains is that of price and not of the cost of making it arable, by clearing off the overgrowth and the cost of reclamation. There is *land hunger* which also plays its part, and induces the farmer to go in for these lands, regardless of the cost and effort of making lands arable. Usually these purchases are within the means of the farmer and he goes in for the same. On the part of the peasant, the desire for having a home of his own quickly makes him decide in favour of buying the farm. Tenancy usually localises itself in the high price land regions while in these regions, ownership becomes the rule. This movement, in order to be useful to the country, should be rightly guided by experts. The right type of the farmers should be encouraged to settle in the right types of estates consistent with the means at their disposal and the experience they have had in farming. All these points have to be considered before the settlement policies are outlined.

Gift and Inheritances A considerable amount of wealth passes from one generation to another by the means of gifts and inheritances. A class of landowning farmers and landlords would pass on to the next generation a part of the wealth which would be distributed among successors and survivors. This need not mean that landlordism would be stabilised in the country, it simply means that as the newer generations succeed one another, the division and the fragmentation of the estates would be brought about and this should result in a wider ownership of land. This may not come about, however, if the law of primogeniture prevails. The economic aspect of this succession of land is that

successors do not have to save enough to purchase the land, they could rest assured that land could be had by inheritance. But in all these cases, the conditions with regard to inheritance are of paramount importance. But this also depends on the mobility of the farm population, for if the farm population is fairly mobile, the distribution of land tends to be concentrated in fewer and fewer hands. If the farmers' sons stick to the profession of their parents they would distribute lands more evenly among themselves and this would mean that a larger population gets the benefit of land possession. In case the succeeding generations move to other professions and seek livelihood in other industries the greater the number of the peasants who would convert their farm wealth, which they get by means of inheritance, into other investments; while the concentration of farms would be greater. In India, for instance, this has been carried too far; and the sub-division and fragmentation of holdings has been quite excessive, with distressing results in the field of farming. But, on the other hand, in the U.S.A., the transference of population from the ranks of the farmers to the ranks of the labourers has been rather of great dimensions. But the fact remains that the land is also acquired by means of inheritance and gifts.

Savings. In addition to gifts and inheritances, there are other means of acquiring land and one of the most important is by means of Savings. The ambitious farmers and tenants save for a number of years and they purchase a plot of land; this is quite significant in the process of the tenants becoming the farmers and owners. The tenants could save for they are able to make more out of lands and the farms they lease than they have to pay, and with their accumulated savings they make a purchase. Modern enlightened States, also, are helpful to the peasants in this respect; tenants pay in easy instalments, and they are enabled to become owners of lands they have been cultivating for some time. Still, it is the savings of the tenant-farmer that enable him to reach ownership rights even though these savings are spread over some long period of time. Sometimes these savings are inherited by the sons and then invested in farms, which are purchased only with the help of these savings. Probing a little deeper, we find that the savings are the result of their differential gain, or profit due to the superior tenants of the farmer-tenant, which enable him to invest his savings in this business; he could only have savings because it was he who could save as against others who could not. His savings are due to his superior ability, superior to the other tenants in the line. True, that the more efficient, and therefore, the richer tenants may live in a better manner than the *marginal* ones, but that is only as far as theory goes, for the standards

of living in the rural areas are determined by the conventional ways of living rather than by the personal wealth or earnings. And if that be also correct that the better and the more efficient farmers lead a much higher standard of life, even then the fact that there is the urge to own land makes them frugal in their approach to the problem and they tend to save and invest the savings in the purchase of land they might own. How many of the farmers tend to become landowners also depends upon the outlook of the farmers.

Credit Another allied factor is that of availability of credit facilities to the ambitious farmer. Farmers may borrow money to invest in land. But the question is whether this money is available at cheap rates or not. In most cases the farmer having saved a bulk of the price borrows the rest and invests it in lands he intends to buy. Sometimes a mortgage may be offered to secure the loan this enables the farmer to buy land sooner than otherwise. This means that the farmer is subsidised to the extent of the difference between savings and actual price that the farmer is called upon to pay. Another consideration that the farmer is often faced with is the cost of the loan. The intending buyer thinks whether it is cheaper to go in for a loan or to rent the piece of land, this means that in case the rate of interest is low the loan may be negotiated but if the rate of interest is high the farmer may prefer to wait and rent out land instead of buying it. Then there is one more calculation and that is of weighing the cost of clearing new land as against the one of cultivating it on rental basis. If the land he intends to buy is arable and does not require any further preparatory operations before it could be brought under the plough the farmer is readily willing to buy it but if the cost of clearing it is relatively high it may be wiser to wait for a better opportunity. The nature of the land that he might like to have on credit is still another consideration that would also weigh with the farmer in this.

Personal Factors In this connection attention may also be drawn to the personal likes and dislikes of the farmers and their outlook on life. If the farmers are of an ambitious type and they like to rise to the status of owners, they would undergo all the bother of saving or negotiating for a loan or getting credit but if, on the other hand they are not inclined that way, they would not undergo all that bother, nor would they make efforts to be raised to the status of owners. Outlook on life also counts for much, for if the farmers are progressively inclined they would try to upgrade themselves or their children but if they are steeped in superstitions or in ignorance, they may rest content with the lot they enjoy. In India, for example

the trends have been markedly towards the increase of tenancy; rather than ownership; and this is due to the over-contentedness of the peasants who do not have ambition swelling in them to rise to the status of farmer-owners. Another important thing in this connection is "integrity" which could be regarded as one important factor of farmer's efficiency and, therefore, increased income, too. By dishonest means, it is, no doubt, possible that one may accumulate some money, but the moment one is discovered, things become hot for him and he could no longer depend upon that course, and what is worse, he loses confidence and business dealings are at an end with him. Reputability and integrity are closely inlinked, and the farmer is paid many times over by honest dealings on his part. Trustworthy farmers are also creditworthy farmers, and that is an important factor in the tenants rising to the status of owner-farmers. Other personal qualities that may also count in this matter are managerial ability of the farmer-tenant, for a better managerial ability would ensure for him a greater difference between costs and expenses on one side and earnings and productivity of the farm on the other. And the farming skills also count for much in the efficiency of the farmer, and this is true for very obvious reasons, which we may not discuss.

State Policy. The next important influencing factor in the calculations of the tenant is the impact of state policy; more precisely the taxation policy. After paying all taxes on land, it may not be worthwhile to own that piece of land; the farmer has to bring this fact into his calculations. If the purchase has been effected by means of a credit or a loan, the incidence of the taxes is all the greater on the intending buyer and he has to take all these into account. In the calculations made by the farmer in regard to the price to be paid for the farm, he intends to buy, he would take into consideration the taxes that fall on the piece of land. What is the amount of the tax, and what is the mode of its payment, both these things are of importance in deciding for the farmer what to pay for that piece of land. This is a relevant consideration in the purchase of the farm. But it should not be imagined that taxation always regards this trend to ownership; certain forms of taxation facilitate this rise in status. In the case of the wealthier farmers adding to their estates, steeper taxation always tones down their bidding power. High bidding power, it may be said in parenthesis, is only fruitful in raising the price of lands, thus pinning the enterprising tenants to that status always. A good system of taxation would slice away this purchasing power and thus bring farm prices to a reasonable level. Land

policy influences the trend towards ownership in still another way, a progressive land policy may enable the tenants to steadily gain ownership rights by means of legislative and legal recognition. A tenant may first of all get the higher status of occupancy tenant which may culminate for him into the status of the proprietary tenant and later on the ownership right on a nominal payment. All this depends on policies followed by the state in the matter of the land acquisition. If however, the policy of the state is very progressive, the result would be liquidation of landlordism and the wiping out of tenancy. The complexion of the state policy is thus a determining factor.

The Inference The above reasoning leads to the conclusion that the factors responsible for the progressive ownership of lands by the cultivators depends upon many other factors more important of which the peasant and the state determine. In this matter, due regard must be paid to the availability of land in the country and the prices paid. The conditions of tenancy, which we propose to discuss in a later chapter on the all important subject of tenancy are also of relevance in this discussion, though we could not give them their due place in the above arguments. But on a comparative weighing of the various factors, we find that free lands are no longer available in most economies while land settlements are also confined to the newer colonies which may not be now abundant. Again gifts are not so frequent as one may imagine, for the trend is towards the break up of larger estates and gifts could only be made by the larger landlords. Succession and inheritance only result in further sub division and fragmentation of holdings. The only good means of acquiring land rights is by savings and credit and what is most important, the State Policy. It would be idle to maintain that in the present day world of progressive ideas, the tenants would be so cowed down by the antiquated ideas of feudal overlordship that they do not desire to be owners.

Land Usage Next we come to the subject of land usage. In this section, we intend probing into the questions of the various aspects of the usage of land. The problem would be looked at from various angles, that of the conservation and productivity of land, its maintenance, the output input relations and its productive and the non-productive uses. A proper use of land would go far to ensure its continued fertility and benefit to the national economy accruing for a long time, while a bad use of land would on the other hand, go to deplete fertility and exhaust its good properties. In this section, we intend laying down general principles and not probing deep, that question we would take up later. An acquaintance with the general prin-

ciples is essential to a complete understanding of the problem in its more intimate aspects. The problem also involves a basic understanding of the principles of land management as also an assessment of the problem from the economic angle. Hence it is not completely a problem in management, nor one completely in the realm of Economics. It has a bearing on both aspects, the management and the economic ones. We shall have to consider the economic relationship arising out of the management of land in its different uses. The impact of land usage on the future of agriculture and economy is what we do intend to study in this section. The problem would be looked at from the macro-economic angle and not from that of the isolated individual farmer.

Productivity and Conservation. The first preliminary question is : what makes the land productive and what depletes its fertility? Undoubtedly, it is the fertility of land that gives it its productivity. And it is the different types of fertility that are responsible for differing grades of fertility and hence of productivity, too. But by productivity, is not understood fertility alone. For some of the poor lands are also very high-priced, too. They are high-priced not because they are originally fertile, but because they have been made fertile and are, therefore, more productive, or because they have been located in a very enviable place and have been regarded as productive from that point of view. It is what land contributes to national dividend that determines productivity, and this depends upon the location of land, its character and the demand for the product. Also it is indirectly dependent upon the original properties of soil, their capacity to improve upon these properties and finally the supply of such land in relation to the demand for the same. Earlier, we expressed productivity of the soil in terms of the capacity and the efficiency of land. Hence it is that productivity is to be interpreted in this twin sense. Productivity of land is figured usually per unit of area, though another measure that may as well be quite suitable is from the one of labour, *i. e.* the productivity per man-unit. Closely connected with this concept is that of the conservation of land, for if productivity is heightened in one season with the result that the land becomes unfit for cultivation later on, that would be depleting the resources of land quite. Hence productivity of land has always to be in relation to the conservation of land, which we may interpret, in terms of productivity, as being the *long-range* maintenance of productivity. It would be no use raising productivity if eventually we are to be face to face with depletion of the powers of soil in a total manner. Hence it is that we have to take these two concepts together. In regard to conservation of land, the productivity of land does no doubt matter much but what does

is the use of land in the long range, too. If rightly and wisely used, productivity of land is maintained over longer periods of time but if unwisely exploited, the land is very soon exhausted with the unfortunate result that for want of proper conservation, land is rendered barren.

Maintenance of Land In this connection we must also refer to the place that the maintenance of land has in problems of usage. Land usage has to be adjusted with proper regard to its maintenance. This means (in economic terms) that position of land before production is undertaken (with regard to its fertility and efficiency) should remain intact after the act of production. One harvesting would leave land poorer than before, but the fact remains that the soil fertility must be maintained and the capacity of the land to produce the same amount of produce also unimpaired. The sole object of discriminate and wise land management is to keep its fertility at the same level for it would more than repay the farmer if land is so tilled as to keep it fit for sustained production for a fairly long time to come. In case, land is not being used for purposes of cultivation, the main principle remains in the application for the land must be efficient in the proposed use. With an impairment of efficiency and productivity of land the first effort of the cultivator or the entrepreneur would be directed to the replenishment of farm efficiency with respect to the use for which it is meant. That would mean both a wastage of effort and resources of the farmer, which he could have better utilised in investment in the proper farming business. Hence, indirectly speaking, too, the maintenance of the farm is important from the point of long-range economy and productivity. The conclusion that the productivity of land must be sustained and maintained seems to be irresistible. In the case of tenant cultivation, the maintenance of land suffers immensely for the simple reason that the tenant aims to get the best out of land and for this purpose does not necessarily bother about the proper maintenance of land, also he cultivates such crops that give him maximum returns out of land, thus each harvest impoverishes farms to a very great extent, and the cultivator, not mindful of cultivation does not put in fertilisers to replace what has been lost. Also the tenant does not make any permanent improvement in land, for the land is not his, thus land suffers neglect both at the hands of the tenant and the absentee landlord. This is an instance how land depletes in point of fertility if not properly maintained. The main contention is that the land must be properly maintained if its usage is to be permanent and lands desired to be a source of permanent livelihood.

Input Output Relations The next question before us is

input-output relation in regard to land usage. We have, earlier, talked of them in a different context. But a few more points need be considered regarding the matter under discussion. We have to compare land-input in relation to the input of other factors of production. Then we have to reckon land depreciation in the same context, for without that it would not be possible to adjust this all. Next, we have to calculate crop-input and weigh the whole situation from all various angles. It may be well to remember that out of the fertilizer that is put in the land, the whole of it does not get spent in the growth of the crops, where a part of it fixes in. Land input is paid for in the form of rent; fertilizers are bought and the crop input estimated by means of prices obtained for the same. It is necessary to determine what part of input is still unused and available for the purpose of the succeeding crops; a similar complication may also arise in respect of other resources, say labour. The accepted practice is to charge all of it to the crop cultivated; though some part of it should be debited to the succeeding crops. Again some plants add something to the land instead of taking away anything, for example, the clovers and the leguminous crop with the result that there may be no depletion at all. Again in the case of nurse crops the difficulty arises in the matter of adjusting output to land input. It follows from the above, that the addition of fertilisers to the soil the depreciation of the land is countered very greatly. Suitable combinations of fertilisers with other input-agents could be found out either by experiment or by means of technical analysis of land. Land may *appreciate* by the selection of certain fertilisers and by a correct selection of certain croppages. Proper drainage and levelling also improve land. But while standing idle it does not depreciate, and over long periods of time, it may actually appreciate when left to itself. We may deduce from this that land never completely depreciates and could be cropped until it has no further value in cultivation, but ordinarily it may be of some other uses of the farmer, for example, that of pasturing or of growing trees. Theoretically speaking, we have to think of impoverishment of land in all its uses, and we could not speak of land having been completely depleted if it could be used in another way. The *presumption*, in this context, is the one of the ultimate supply not getting completely exhausted in the matter of nutrients. It is the combination, (to this we shall have occasion to revert in a later chapter, of the fixed land inputs, in respect of the location of land and its inherent qualities), and the variable inputs that matter in input-output relations. When a piece of land is purchased, we also purchase along with it the inherent qualities and improvements and fixtures (like fences, roads and bridges

etc.), in the strictest sense it would be impossible to separate them. And we could not account them in the input-output relations on land.

The Optimum Level of Productivity The question now arises, what is to be the optimum level of productivity. This depends upon a proper conservation of land and the maintenance level of the same. The essential feature of the conservation of land is the balancing of its present uses and income against future uses and prospective income, with the object to get the most out of it over a long period. With this concept of conservation in mind we could be in better position to gauge the maintenance level. This level is a special level determined for each farm separately because of special conditions attendant on it. Methods of cultivation suited for attaining this maintenance level are also of a special nature, as extensive methods may suit certain farms better while the intensive methods are indicated in certain other farms. The trend of scientific opinion favours the maintenance of productivity of soils at a high level. The farmers are, therefore, advised accordingly. It has been found that the lands could be maintained at relatively higher levels of productivity than at present if the farmers were to adopt methods of scientific methods. It is the new technology that enables the farmers to maintain lands at higher levels of productivity. They could also produce more and at a lower cost. The advantage of keeping land at a high level of fertility and productivity is that it has in that case a wider use age, i.e. that it could be put to larger variety of uses than if land were kept at a low level productivity. Bearing these points in mind, we shall now endeavour to find optimum productivity of land. The term optimum productivity means the maximum productivity of the land possible in the circumstances of the production attendant on that cultivation. The optimum level in this context would be one at which the level of productivity is being maintained at the highest pitch. Not that this level of productivity is to be interpreted in terms of a single land use, but has to be considered in a general sense and in the view of its competing and alternative uses. We must, therefore, reckon its various uses so that we may be able to arrive at the correct estimation of the maximum level of its productivity. But the major difficulty that may arise is that of not being able to know the effect that different uses of land would have on its future yields. No correct anticipation could be made even by the most calculating farmer. It is in the fitness of things that we should concentrate on the subject a little more in detail in order to find out which are the more productive uses and in what circumstances. But before we begin to analyse

the productive uses, we must also recognise the non-productive uses in order to eliminate these.

Non-Productive Uses. From the national point of view, non-productive use of land are to be avoided as damaging to the national interests. The fact is the land is scarce and fixed in quantity ; hence it is in the interests of the national economy that this scarce agent must be used in the most economical uses and be made to yield maximum. Land as such is never non-productive, but for the fact that it is being non-productively used and it is the non-productive uses that must be eradicated in order to raise its total productivity. Among the non-productive uses may be uses of land which do not in any way lead to addition made to the communal wealth or income. With this definition of the non-productive uses, we have to find out how these could be eliminated quite. Another way of approaching the problem is to emphasise the fact that the non-economic uses also include those uses that are not quite the best. If a certain piece of land is usable in a better manner, it would be wasteful on the part of the farmer to use it for a less productive one. That would be taking a broad view of the problem and one that should not be shelved aside as being of no consequence. In addition to these twin tests, we have another one too ; the test of absolute productivity. In the non-productivity of land, when the production index of land falls to zero land would not remain productive in that particular use. Among the non-productive uses mention may also be made of the use for the purposes of letting it go waste and not bringing it under cultivation. Cultivable waste is land in not economic use and one that must be avoided at all costs. The essence of the argument is that it is not in the interests of land nor of the economy that the non-productive uses may be persisted in any longer. That may require a survey of land resources and the uses to which they are being put.

Problems of Usage. In this connection, we must also discuss the problems that may face an entrepreneur in the matter of land usage. What are the implications of land uses and what are the problems that may arise while the same land usage is also continued. These are the two important things that we must understand before we could enter the controversial arena in this regard. In this context, we intend raising the problem of turnover and returns from land, for that has a bearing on the problem in hand. We shall also need to stress the role that fertilizers and nutrients play in this connection, while the problems of soil erosion (which, as we shall see, arise out of the misuse of land by the farmers) and finally, the problem of land improvements affected on land under consideration. All these problems have to be reviewed because they are connected with

the area in hand. What are the turnovers of different pieces of land and how do these stand in respect of the usage of land? Could we improve on the same by our efforts or not? This is for the consideration of the farmer. And then the returns of land in this connection must also be thought of if we want to be sure of the most suitable usage of land. What is the consumption of the various fertilisers and nutrients and with what results, both short run and long run? This is another difficult problem that has to be tackled. And lastly, we have to be aware of the possibility of erosion by wind, water and weather, in the usage problems, for from the conservation point of view, the land use must be designed to avoid erosion, rather it should be such as to be an anti erosion measure in itself. And to round off this discussion, we intend raising the issue of land-improvements which may be effected in the light of particular uses to which the lands are being put. Improvements would also be indicated by the uses, present and potential, to which the land could be put, hence their importance.

Turnover and Return In the light of the above facts, we now examine the problem of turnover and returns from a certain piece of land. Different cropping systems may present different intensities of land use and these systems of cultivation maintain land at different levels of productivity. An intensive use of land may mean its high turnover for it is used heavily. In cultivation, the farm is fed heavily and it yields heavily. This may expose the soil to erosion and exhaustion. It is in this context that we have to watch the impact of turnover, which could be raised but with consequences that have to be taken note of, in advance. Turnover may have still another meaning and that is that certain plots may yield a larger number of harvests, in this sense, the turnover may be great, for instance, with the help of the scientific means of cultivation. The farmer may be able to raise five or six crops, that could also be described as high turnover. But there are also restricting influences on 'high' turnover programme, i.e. the market impact, firstly the market may be able to absorb the produce only at lower prices and secondly, many crops may only have a very limited market. The first influence makes the farmer think in terms of returns that he could get out of a higher turnover, for the turnover by itself would be senseless. And the second implication is whether the farmer could utilise his energies in the correct manner, for if he has only to grow the unwanted crops by means of this high turnover, he should better not grow them. Therefore, turnover is by itself intimately related to the returns of the crops he manages to get. Turnover has only significance with respect of his return that he expects. Not that this applies to the region

of farming or cultivation, but that this also applies to the field of cattle-raising for in that sphere he would have to think of his efforts worth the candle. And then in the field of breeding it is hardly difficult to accelerate the rate of calving, for the biological processes could hardly be speeded up. The only thing that could be done is in the field of dairying, where he could raise the milk yield of the cattle. But this is also in respect of market considerations alone. In short, the turnover and the returns to the farmer are the twin considerations that have to be taken into account before the farmer could launch out on his enterprise of increasing the turnover. That use of land would be the optimum, which would ensure to the farmer the maximum return in relation to the maximum turnover within the resources that are with him.

Fertilizers and Nutrients. The most profitable use of fertilizers has to be determined before the farmer could aim at securing maximum productivity and returns out of land. The farmer has mainly to rely on his own judgment in this matter, his own experience and his own observation. A high turnover is also obtained by means of feeding soils with bigger doses of fertilisers. Still, a judicious use is what is advised, for an overdose of fertilisers would go to bring about decay in the soil and may not ensure increased productivity. Certain crops also tend to substitute fertilizer input; legumes and other introgenous crops may replenish soils much more than expensive fertilizers. Again there is the possibility that farms may be able to produce their own fertilizers much cheaper than what they buy from the bazar. Green-manuring, for instance, could be a farm-produced fertiliser; farmyard manure is another example in point; and this handy fertiliser is better than most of the costly ones. And then fertilisers and the nutrients could not usefully apply if the preparation is not done, for tillage is necessary to aerate the soil in order to make it fit to absorb the fertiliser and enable the soil to grow crops efficiently. In the aerated soil, humus is oxidised more quickly and plant nutrients more easily available. Thus the problem of land usage is not merely one of mixing fertilisers in the soils but also that of the making those nutrients available to the plants. The whole issue seems to be of a technical nature but there are some economic implications too, which we may note in passing. With good absorption of nutrients and fertilisers, the expenditure of power and labour in the cultivation of land is much less than otherwise it would be. Again, the deterioration of land would also be arrested in the case of good application of fertilisers and nutrients. But with the progress of science the application of fertilisers must be selective, for special soils and special crops require special fertilisers. In

once the sods are broken the costs of stopping this erosion by getting the soil under grass may be much more than most of the farmers could stand. Several measures are suggested, for example, strip-cropping, leaving the crop-residues and the rubble on the land after harvesting, ridging, contour tillage and the water-spreading devices. The farmer has again to pick and choose. The question before him is whether to incur extra costs of combatting erosion, by overcropping or whether to let farming remain within the safe limits. He would calculate the extra-returns from the crops that he may cultivate in spite of threatened wind-erosion. From lands where the return on cultivation is just marginal one, or it is just barely enough to cover costs, the farmer would have to calculate in terms of reseedling it under grass. And in this estimate he would reckon the relative costs of reseedling the land, the different alternative methods, in regard to the erosion caused by the action of weather and sun. The problem is of great importance for the simple reason that it is the action of weather and the sun that may accelerate the erosion process and the consequent march of the desert. This is especially true of tropical climates, for in these regions, once deforestation takes place, the action of the sun on the soil is not impeded but is direct and unfettered, with the result that the erosion goes on unchecked. In this matter, the best policy is that of afforestation in the affected regions. Irrigation may be useful in this region, but the *long-term* remedy would be afforestation. On the whole it may be said that the problem of erosion is rather complex and not one that may be ignored or neglected by a farmer in quest of increased turnover and increased productivity. The usage of land would be indirectly by the considerations of the possibility of impending erosion, by water, wind weather or the sun. As we have seen, the suitable use of land could also check erosion, or at least help in maintaining the soil intact, while an incorrect use might hasten this evil.

Land Improvements and After. Next we turn our attention to land improvements that are sought to make the use of the land more enduring and more profitable. Initial investments are required for making improvements in land. These may be short-term or long-term. The short-term improvements are those that may not require much time to yield fruit, but fruitful in the short period, while the long-term ones always take some time to show results. It is possible that the short-term improvements may not be so costly and may be undertaken by one who does not have to till land permanently but only temporarily; he may thus substitute the short-term improvements for the long-term ones that land needs. How far would this substitution be effective in the matter of land productivity is a question for the farmer to answer, for in his effort to save the high cost in-

ings, recreational parks, roads and other transport means. But it must be admitted that the most important use of land is under the plough. This fact is apparent from a survey of the uses of land even in the highly industrialised countries of the world. We find in almost all the economies that largest portion of the surface of the land available is under village. We shall, in this section, make detailed references to the extensive and the intensive forms of cultivation with their economic implications, the problem of the sub-marginal and the unproductive lands (from the point of view of cultivation only) and the supply of arable lands. All these issues have an analytical bearing on the question of cultivation. This section is only an essential like in the discussions on the problems of usage of land, and not of the same analytical character, as other sections, for the simple reason that the subject has already been discussed in several chapters dealing with the field of farming alone. Still, we shall look at the subject from the standpoint of the usages of land and not from that of cultivation as such.

Intensive and Extensive Forms. Bearing the above points in mind, we examine the *intensive* and the *extensive* forms of cultivation from the point of view of usages of land. These forms are also alternatively known as *high farming* and *low farming*, because of the degree of intensity of farming of land use. The intensity or the extensity of a farming system depends on *land-man ratio*, in the country. The relative intensity of cultivation may be measured in terms of the labour used per acre, or more accurately the resources invested per acre. This may be termed as the *physical* intensity of land, though this again does not appear to be the correct term, because of the fact that the term *physical* should only refer to natural factors and not all resources that a farmer may be equipped with in the matter of cultivation. In fact, we should consider three separate *intensities*: *labour* intensity, *capital* or *equipment* intensity and *physical* intensity or *land* intensity; and then they should be combined into a single term which we may coin as the *total* intensity of land. These intensities may also be converted into monetary units which may facilitate comparisons. It may also be pointed out that intensive and extensive forms, though they may theoretically be dependent upon the land-man ratio, are not wholly determined by those factors alone, for the availability of capital resources with the farmer as also the availability of land with him are other factors, which may push him, even though unwillingly, into adopting the extensive or the intensive forms. In case, the farmer has good resources in point of capital and equipment, he may launch out on the intensive forms of cultivation in spite of the indications given by the land-man ratios and such other allied considerations or factors.

Economic Implications Examining the economic implications we have to point out that the two systems are born out of necessity. That system of farming would be preferred which is consistent with the peasant's resources and also suited to his cropping needs. Extensive cultivation is also confused with scale of farming to the extent it is co-existent with that. We shall have occasion to revert to the subject in a subsequent chapter, but suffice it to say here that it is not always in the large scale that extensive practices may be followed. A glaring example is that of the Indian farmer, whose holding is very small, but his practice of farming is extensive, while his prototype in the West follows intensive farming even when his farms are much larger than those of his Indian brethren. It is, however, usual that the extensive five practices are followed in the large scale of farming, while the intensive practices obtain in the small scale. The farmer must take stock of the situation himself, and weigh the resources that are at his command and the ability of the farm hands to manage the show efficiently. All the above considerations are taken into account, he would assess the rate at which soil may be depleted if cultivated intensively, as against the gains therefrom. Also must he assess the cost of intensive cultivation as against those of the extensive ones, if adopted. The long term and the short term issues have all to be squarely faced by him. And above all, he would also see to the operation of the law of substitution as it works out on the land in the sphere of cultivation. How far could he combine the variable factors of production with the fixed ones, e.g., lands, is also another important problem to be tackled before arriving at any conclusions with regard to adoption of either cultivation. We shall discuss this aspect of the problem in our chapter on the "Combination of the Factors of Production".

Sub Marginal Lands Strictly speaking there is no such land as the sub marginal one, we have only a sub marginal use of land. This use is not a remunerative one; the farmer does not gain anything out of cultivation of these lands. The marginal lands, as already described elsewhere, are those which just pay their way through and do not give any good return to the farmer excepting that they cover his costs of production. The submarginal lands are those that do not even provide the farmer a remunerative return or cover his costs of production. On these lands the pressure of population is very high and the remuneration per capita is very low. The farmers do not give up the cultivation of these lands because he has no other avenue of earning or is not able to find any alternative employment. Submarginal lands may be *sub marginal* in respect of a particular use and not necessarily in all the various uses that would be something very difficult to imagine and concede for the land is capable

of several uses and if one use is the submarginal one there may be other uses that may be the marginal or even supramarginal ones. It would be idle to imagine that a piece of land is submarginal in respect of all the alternative uses to which it could be put. The problem before the wise and conscientious peasant is to hit upon that use of land as would be the correct one and not make land submarginal. If successful in this search of his, he would be able to make the "submarginal" lands into one which may correctly be termed as the "supramarginal".

Unproductive Lands. The problem of unproductive lands is a little more difficult for it is the community that is involved here and not an individual who may be unable to bring the "unproductive" lands under the plough and turn them to productive ones. Unproductive land may be broadly defined as one that is not productive of the use to which it is being put. But it is also possible that productive use may be harder to find and such a quest may only be moony. It is, therefore, possible that an unproductive land may be a barren land, lying say in the desert, and in an out-of-the-way place, not capable of being used in a productive manner. The problem is, therefore, the one concerning the community and not an individual farmer, for as soon as the farmer finds that a certain piece of land is "unproductive" he may take steps to give it up, dispose it off or else leave it for good. Unproductive land may require a good dose of fertilizers for proper replenishment of the soil or it may require a major irrigation work to saturate it with water in order that it may be arable, or it may require a transport link to make it accessible. All these things the individual farmer, by himself, may not be able to afford, and in this particular case he may feel helpless in being unable to bring the land under the plough. These lands may be termed as abandoned lands, for they may have to be abandoned by the individual farmers till the community awakens to the need of making them productive of some economic usage. It is also very probable that the farmer has abandoned these lands just because of his ignorance of the latest advances in the sphere of farming technique, or because he does not have the equipment with him to make these lands yield some production. But the planners could certainly discover some other good usage for these abandoned lands.

Supply of Land. In this context, we need to discuss the more important features and implications of the supply of land. We must notice that unlike other goods, land is irreproducible. True, that additional land could be brought into use, but that also within limits; and this additional land is neither easily accessible nor so readily available to the farmer or to the community. It is possible that the cost of reclamation is rather high and discourages the entrepreneur to bring this land into

arable uses. And even if we admit that land supply could be increased, it is very doubtful if better classes of land could be added on to the present supply. On the other hand, the greater probability is that the grades of the present land could be raised by means of artificial fertilisers and scientific treatment of these lands. In short, the present supply of land, both quantitatively and qualitatively speaking, is rather fixed and rigid. Differences in the productivities and grades of the lands are quite distinct and pronounced, too. To the community, there is a loss if an inefficient farmer takes hold of good qualities of land and deprives the others of the same. The loss is double, for in the first instance, the inefficient operator is unable to do justice to that piece of land, and secondly, he has deprived another better operator of that land. Thus the community loses what it could have gained from a better utilisation of this land. This is so because that land could also have been put to a better use, more land of the same quality is not reproducible at all. Thus land usage, in view of the limited supply of land, is to be very judiciously decided upon in the interests, not of individual farmers, but of the community as a whole. The point that needs emphasizing is that the use of land becomes all the more important because of the two limitations attendant upon the supply of land, firstly the limitation of quantity (land is limited in regard to the total supply, present and potential in a country) and secondly, the limitation of quality (the qualities of superior grade lands are very much limited). This is the relevance of land supply regarding the issue of land usage.

Public and Private Uses Now we proceed to discuss the implications of the public and the private uses of land and the conflict that arises there. In this big questions are involved, the broader issues of policy and people with respect to the use of land. This is so especially because the economic systems are so divers and the conflict of uses as between the public and the individuals may or may not arise in certain economic systems, where private uses may not be permitted. Where, however, the public uses compete with the private ones, the share that goes to each raises issues of a conflicting nature. In this connection, we have to be clear on certain issues and certain concepts related to the uses of land both by public and private persons. Land, as usually understood, includes space relations and the prevailing complex of climatic, topographic and soil condition. Out of these factors, space is a stable one, though the space allotted to one use may shrink or expand, according as more or less land is under a particular use. It is possible that land may be more utilised in agriculture than for industry, or that more land may be devoted in the building of houses or for the laying of the means of transport and communications and for

recreational purposes. But the fact remains that the total space area would remain the same, in spite of these fluctuations, in the uses of land. In the same manner, "topography" is also stable; we need not labour this point at length. Similarly, climate also has the same stability of character over long periods of time, with cycles of varying conditions for certain periods; the climatic predictability may be possible in certain cases and certain countries while there may be a great amount of uncertainty in other cases. It is quite evident that the clash of public and private interests does not enter into any of these issues, in the realm of climate the use of land could not be exclusive, nor so in the sphere of topography. It could only be so in the sphere of "space" and soil, that the conflict may arise, in the latter case the clash of interests may be more pronounced than in other case.

The Scope of Public and Private Interests. Talking of the scope of public and private interests, we shall have to refer to the fact that the soil is the essential foundation of all social and economic activity. Even in the urbanized and industrialised society, soil qualities do predominate in the economic calculations of the planners, for the complexation of economic activities may change with differing soil structures. And soil is a product of natural processes and thus essentially out of man's control, though he may be able to influence various aspects of the same by means of his ability to improve soil by means of scientific methods. The present soils, therefore, are the product of a developmental and evolutionary process, over long ages. The public interest over land extends over the whole range of land uses. Agricultural usage is quite important while other uses, such as those relating to the building of the houses, industrial sites and the recreational places are secondary. From this point of view the public interest consists of the maintenance of the long-range productivity of the land so that it would provide a constant and sufficient supply of the agricultural produce at a low cost. But it may be pointed out that public interest does not only limit itself to the supply of the farm produce, but also to the provision of other uses adequately to meet the needs of national economy consistent with the maximum efficiency of nationals. It is the equitable and good distribution of land among all these uses from the point of view of the national economy that is urgent. The point is that the uses of land should be distributed so as to contribute effectively and efficiently to the national economic life and its progress. On the other hand, private interest in land as expressed from the angle of the individual farmer, relate to long-term continuous and efficient farming. In an individual's calculations all such interests as relate to the setting up of the recreational parts, etc., do not enter, as these are provided for by the state. And to the individual far-

mer the best use is farming. His relative success among farmers is dependent upon the volume of produce and the costs of the same per unit, he will make efforts to arrive at the most profitable combination of costs and volume, though of course he may be ignorant about the future trends of the same, his aim would be to arrive at the lowest costs consistent with the highest volume of produce that he is able to reap out of his farm. The farmer is conscientious of his own interest and, in order to maintain productivity over a long range of time, he would like to maintain the productivity levels. An intelligent farmer would most probably balance the soil depleting with the soil building influences so as to assure that productivity is maintained at a certain level. Thus in this case, the farmer, out of his own personal interest, follows precisely what the public interest demands. At least, this is plausible as far as the theoretical aspect goes. But in actual practice it may prove to be only a fond hope for the fact is that because of the force of competition and on account of his limited resources the peasant may not be able to look well after the interests of the land and may forego the soil maintenance, the grounds of conflict arise in this case.

Grounds of Conflict. Thus arise conflicts between public and private uses of land. The farming system may not be efficient in the sense that it is not possible for the farmer to maintain soil productivity at the proper level, which may be consistent with the national requirements of the long range. It is also possible that the farmer is unable to look after the maintenance of the soil due to his adherence to custom and tradition or because of actual distress. National requirements might require the farmer to maintain productivity level, but the conflict arises because of his inability to do so in the manner expected of him. He may be powerless to do so or he may be too weak, financially speaking to do justice to the broader social interest, or it may be due to his bad and out of the way location that he could not do justice to his soil. Thus even when the interests of the farmer and that of the nation are mutually contributory, he may not be able to serve either because of his helplessness. Put in economic terminology he may be more concerned with the conversion of personal capital into current incomes which he gets from land without regard to the maintenance of that personal capital (land) intact. The second conflict may arise out of the working of the pressure groups in countries where land is scarce in relation to people dependent upon the same, the private interest demands that the pressure of population may be eased by more equitable distribution of land while the public interest demands that the farming system may be set on the economic bases and the un-economic units may be merged into one another to form economic units. But more conflicting are the problems that relate to the use of land, for the private interest may demand

cultivation of commercial crops which may secure him a larger income while the interests, mainly national, may dictate their being put under food and feed crops. The farmer may be blinded by considerations of private profit-making. Incidentally, then conflict arises over the private and public possession of land, this is a problem that is connected with that of the land tenures and we must wait for its analysis till then; it may, however, suffice to say that the range of interest conflicts over the problems of tenancy, as private landlords would very much like to rent lands on conditions that may suit them. Finally, a conflict may arise also over the question of the public acquisition of land, which the state may require for certain national interests, or for the construction of some projects of national importance. Clearly in this case, the national interests must supervene over the individual ones.

Maintenance of Land. Both from the individual and the national points of view, the question of maintaining soil is of superlative importance, for if the soil is not in a good state of productivity, prospective agricultural productivity would register a fall and that would be to the detriment of the economy. This issue is pregnant with several others; the utilisation of the resources in relation to the land and allied to it, the questions of improving the technique of agriculture, the variability of the soils and the unit of production in farming. All these issues are of practical importance and relevant to our analysis. The problem of the use of other resources in combination with land would be discussed at length in a chapter "Combination of Factors"; but meanwhile, we may state if the land is plentiful, as in newly settled countries, the question of effecting economy in regard to land does not arise: the system of extensive cultivation could be followed there. But in the regions where land is scarce, the farmer would tend to combine more of the other resources and try to economise the land resources. In order that he may be compelled to conserve and maintain land productivity, it is very essential that he should be made to use the land resources in such a manner as not to deplete the farm and soil resources quite. In this matter, he would have not only to think of the input-output relationships but also the long-term productivity of land, for it is in this light that soil could be maintained. It again depends upon the relative costs of his resources and soils. With a rise in factor prices, he would try to maximise the output out of these, thus depleting soil resources. This conflict could be resolved by the public and the state authority insisting on not a very heavy turnover of crops. In the event of an expansion of farming activities, the problem may not be seriously posed, but in the event of the supply of more lands having been quite exhausted, the problem gets connected

with that of economy of land. His personal interest may not be much concerned with the maintenance level of it while the national one may. National effort should be directed to a proper sampling of land to find out the capacities of each piece and then to plan production accordingly, but this type of overall planning and regimentation may not be possible in a democratic country and the other policy adopted in this regard should be to provide the land nutrients for the replenishment of the soil at cheap rates. That may be a measure designed to reinforce peasants' resources in this direction.

Population and its Pressure Regarding the maintenance of soil, the most relevant issue is that of the population and its pressure on land. If this is high, the intensive cultivation is the rule and this has important implications for land uses. The farmer, under high pressure of population, has to go on cultivating the same piece of land regardless of the depletion of its resources and the soil. If his is a small plot, the problem assumes a complexity of its own, he is unable to leave the land fallow to let it recoup its fertility, while his resources are often too meagre to permit him to replenish the land in an adequate manner. At the same time, the return from each farm is small and inadequate for farm family with the result that the maintenance of soil is rendered more difficult. The problem does not remain so pressing if the pressure of population is not high, for then this depletion is not so heavy, as an extensive system of cultivation could be followed by the peasant, without continuity of the cultivation, some soils could certainly be given some rest in the tilling process. The pressure of population has also another implication in this context, in the case of a high pressure of population on land, its greater proportion would inevitably be used for the purposes of food crops and lesser amounts would be left for other uses. This means that the public usage of land would suffer at the cost of providing for the food to the populace. But land hunger would intensify in this case, for there may be several people who may not have ownership rights in lands, they would also strive in this direction as an ownership right would ensure at least a bare subsistence and provision of food. Here, again comes conflict of private and public interests in the use of land, for public interest may dictate a use of land for purposes other than merely that of food growing. Not that the state would be ignorant of the importance of attaining self-sufficiency in food, but that the method of securing it (as followed by the individual farmers by running their farms on the subsistence basis) may not be the best use of land, these petty farmers may be unable to bring about improvements in farms being unable to afford better equip-

ment. Mostly, this type of conflict is rather difficult to resolve, though efforts are made to improve the economic strength of the individual farmers by means of Co-operatives. Another way out of conflict may be by the hunt for more land, and intensifying reclamation activities. This search may be not well rewarded as the addition of more lands to those already in cultivation may be a remote probability. It may, therefore, be doubted if this method would prove of any substantial worth in an "old" country. Still another method would consist in a proper utilisation of land: land would be correctly utilised ensuring greater food production by lesser depletion of its resources. It may be questioned if such regimentation is possible or even desirable from the democratic angle. But this is an issue that might be for the politician to resolve rather than for the economist.

Price-Cost Relationship. Private interest is expected to follow price-cost trends. Those lines of production would be taken up which in the light of these relationships be the most remunerative. Individual farmers would use their farms in accordance with the principle of comparative advantage, discussed elsewhere. Even in a centrally planned economy, the price-cost relationships are not lost sight of. If, however, efforts are made to foist on farmers any other decisions, which are not in keeping with them the result would be the rise of black markets, or production misdirected, and try to keep pace with price-cost trend. The individual farmer, who is dictated by such outer relationship would not much care for public interest, but would be guided solely by his own personal profit motive, for he expects that by following a certain line of production, he would be able to earn more, make greater profits and become richer. This is normal and could not be brushed aside as pertaining to selfish and narrow interests. Main conflict that arises out of the price-cost structure, is in the field of agriculture, as for instance, the peasant unmindful of the public interest may cultivate commercial crops instead of food crops, whose prices might have been pegged low by the implementation of the economic controls. Commercial crops could certainly not compensate for empty bellies and the clash of public and the private interests comes to the fore. The problem is rather tough, except that the public interests have to be served even though at the cost of the private ones; the individual farmer has to be forced to serve the public interest. Subsidies may be given to them in order to make up for the loss of profits they incurred by resorting to cultivation of that crop which is in keeping with the public interest, or legal action may be taken to compel them to undertake the cultivation of the desired crops. But probably the first method

may be better in that the public interest is better served and the farmers may not think of the evasion of the law. Another alternative method could be procurement schemes launched by the government on the basis of the guaranteed prices : this may also be successful in that the crop sown may be procured, but it may be doubted if the peasant would care to cultivate the crop that it is the desire of the government they should. And then in terms of cost, the latter suggestion may prove to be more expensive than the first. Inevitably the price policy of the government is having a lot of say in the matter of the farmer's decisions. Suffice it to remark here that an administered economy may also be susceptible to misinterpretation of public interest.

Technique and Profitability Then there is a range of conflict precipitating the decisions affecting the application of improved technique applied to the field of agriculture. The public interest may require that the latest advances in the sphere of agriculture may be adopted, so that these may bring about improvements in the national economy. But private interest may be endangered thereby. In the first instance the individual peasants may have to merge their landowning rights for the sake of the adoption of the latest technique, which may be possible of adoption only in the larger units. This may create difficulties of an insuperable nature. Another fact that must be recognised is that technical advances when adopted contribute most to the productivity of best lands; that may mean that lands which are poor may not be able to benefit from technical advances, even if adopted. It would be the more efficient farmers who, usually, adopt the latest in the technique and that would be justifiable too, for it would be the farmers with the supermarginal lands who benefit from these innovations most. This would again present a conflict in the private and the public interest. The public interest would demand that the more advanced farmers do not use the more advanced systems as much as the sub-marginal landowning peasants who may be the least ready to employ these latest technical methods. And then the introduction of the latest technical methods also has another impact on land uses, the production per worker and per *capita* rises with the inevitable result that the standards of living rise and the less profitable farms are constantly being thrown out of use letting these go into deterioration. The submarginal landowning peasant suffers from competition precipitated by the highly mechanised and modernised farms run according to the latest in the agricultural technique. And still another issue raises its head; the highly mechanised and modernised farms have high operating costs, that it may be impossible to cover

when prices fall. Hence the public and the private interests clash in this sense, too, for the public weal may demand a speedy mechanisation of agriculture as also its modernisation, but a private individual has to calculate the costs and the profitability of the venture, however advanced that may look. Theoretically speaking, the point of marginality would move upwards as agricultural science progresses; and this in turn means that the land use problem would be of a recurrent nature, for adjustments in the usage of land would have to be so made as to keep in line with advancing technological levels. The public interest on farm lands is concerned with adequate and continuous supply of produce from total land. Hence it is essential from the public point of view that the marginal points of quality (both present and prospective) be determined, and that public assistance may be incurred to maintain the supramarginal lands only.

Land Management. The next point bearing on this issue of land uses is that of land management, which, if efficient, enlarges the scope of land uses, while under poor management, the land may be used for purposes other than the best ones. An important element in land usage is that of holdings, i.e. systems of land tenures. Here, we are concerned with the advantages of a system of holdings from a particular point, or from angles of land ownership and the management thereof. The term "estate management" may be used in this context, though the term "estate" conveys the idea of a big farm and not an ordinary holding. The question in land usage is whether the estate or the farm is in the hands of the public authority or the private farmer; and even if it be in the hands of the public authority, the next question that would face us is whether land is being operated directly under the surveillance of public authority or private persons, or whether corporate bodies are handling the farms. All these points are of significance for if estates are being managed by public authorities, they would be operated from the national angle, while if the tillage is under corporate bodies, their exploitation is of a type altogether different. All these various points have to be noted. Another point that is sometimes made is we should take the whole land when talking of land uses and not small farms, for these usages are from the point of the whole economy and not from that of single and individual farmer. The more fashionable trend is towards the state ownership of land, but even here we must recognise what effective management of land is and not be led merely by ownership fallacies. It is effective management, (with the fixing up of priorities) in the problem of land use that assumes relative importance. Another point that may also be considered is that the state may also impose restrictions and lay down

regulations in order that the use of land may be the optimum possible one, even under the private ownership and management of land. And in this context we shall have to weigh the pros and cons of these restrictions against the benefit of better uses of land from the imposition of the restrictions and regulations by the public authority on the private and individual owners. Hence land management is also an important point to be reckoned in the matter of appropriate uses of land, in this study.

Land Retirement It is maintained that crop (or agricultural) production is large when technique is applied, but production out of direct usage is not so high. There has been increase in the produce grown for human consumption, but there is a limit to this particular demand. The attention of technique has always been directed towards the increase of the 'non consumption' (from the view-point of human consumption only) of crops and produce. Increase there has been in all crops including pasturage. Secondly, there has been an increase in *converting* capacity of cattle and the live stock, too. And lastly we must also recognise greater diversification and better combination of the crops. This has been due to the increasing trend towards *maximum exploitation of land*, that is why increasing application has been made of the scientific knowledge and technique to the production of the crops. Turning to the purely consumption point of view, we have to point out that with the world favouring a better and more qualitative *dietary*, it may be possible that the food crops may demand less of land, and less land may be now utilised for *direct human consumption*. That is where land retirement comes in, land may just be put out of use, as the demand for so much land may shrink and contract. Land retirement is also said to have come about when the higher grades of production or more concentrated production, or the higher agricultural uses of land are not in vogue but only the lesser agricultural uses are being favoured. This means that land retirement comes about when the land is either temporarily thrown out of use, or put to a *lower* agricultural use. This shift in the *agricultural usage of land comes about* when the *institutional* and technical adjustments have been made in the land uses. This process is especially marked in those countries where agriculture has been mechanised and the modern methods of land usage adopted. In fact, in a country which is long settled, the problem is also similar. The effective soil, in that country, is made up of labour and materials. The more important part is played by the human beings, in fact man has been responsible for land in its present situation especially in regard to its uses. In all private and public angles on land, the most significant role is that of man and his attitude to land. The fundamental pro-

blem that faces the agricultural economist is that of getting rid of sentimental attitudes towards land. Rational conceptions of relations between land and materials and men, is the aim of Agricultural Economics, for most of the present uses of land are undoubtedly governed by human sentiments which have been traditional about land for centuries. It is in this context that we have to think of the retirement of land, for it would only be possible with a rational outlook on the problem of land usages; and not from a sentimental view-point.

Urban and Rural Uses. No discussion of the land usage would be complete without a reference to urban and rural uses. Included in the urban uses are those for the purposes of building factories and houses for residential and other purposes, while in the rural canvas the most important relate to the agricultural ones. We shall in this short section attack the problem of distribution in the urban and the rural uses. A glaring point in this connection is the impact of industry and the ruralisation and the dispersal of industry, too. This factor alone has created a different problem in the mater of land uses. And then there is the reservation of land for housing and the recreation activities of the people for with a greater emphasis on these a change is brought about in the price and evaluation of land. We shall also judge the distribution of land between the urban and the rural uses : the fact is that there are city farming ranges, which strictly speaking could not be included in urban uses, nor even in the rural areas. They are a class by themselves. This section, though brief, is quite important for it would throw light on the more important uses of land, and on the problem of land usage as understood by the layman. But from the economic point of view, too, this is important for the distribution of land in urban and rural areas is of great relevance to issues facing land usage in general. It is interesting to know how land uses begin to assume a different shape with changing distribution of land between urban and the rural uses of land, as analysed here.

Impact of Industry. More important in the urban uses of land is that for industrial purposes. True, that land is in residential and other uses, but out of all these, the industrial one is the most important. In was in the urban areas that industries were set up for one reason or the other. We need not go into these causes here, suffice it to observe that the use of land for the purposes of industry is the most important both from the point of view of the economy and the urban areas, too. There are two considerations that are pertinent, *firstly* how much land should be allotted to the industrial uses and how much of it to particular industries. In regard to the first issue, the more pressing (consideration) is the suitability of land for industrial

uses *vis à vis* the other uses this would be decided by the price of land and the demand for the land for the industrial use. In the case of the second issue we have to find out the relative demand of each industry the price it could afford to pay from that point of view. Broadly speaking the distribution of land as between the industrial and other uses is governed by the law of comparative advantage which we have explained elsewhere. And the relative usefulness of land for the different industries would also explain why land is under a certain industry and not under another. The main factors in this connection are the factors of situation (both with regard to the availability of the materials and marketing facilities) and of price of land. But it must also be pointed out that land is required for this purpose in villages.

Ruralisation of Industry The next point that is allied to the above issue is the ruralisation of industry. With the recent trend towards the dispersal of industry the ruralisation of industry is now a marked tendency in the economics of location. Various considerations arise for the ruralisation of industry though we shall refer only to the more important ones. In the first place it is of strategy and defence this means that the ruralisation of industry and its location in the out of the way places would ensure greater security to it. But there are also low rural rents for high urban rents increase the overhead charges of industry. Again in the urban areas the wages of labour may be high because of the competitiveness of the industries for the same (fixed) labour force and the labourers in the rural areas may also be willing to accept lower wages for the simple reason that the cost of living there is not as high as in the urban areas. And then the consideration of being able to expand is also paramount there for example land may be available and expansion quite easy and possible at a relatively low cost too. With the electrification of rural areas difficulties in respect of power availability have also been overcome. And smaller units can be set up in the rural areas for standardisation of the machine parts has made it possible for the smaller units to be planted. The total effect is that ruralisation of industry has come about in recent times. The extension of transport facilities to rural areas has speeded up this process. Its impact on the use of land is that the rural areas are now setting apart less land for agricultural purposes. This also means that these uses tend to be diversified very much more than ever before. This may be a progressive trend too. We have already observed in this chapter that this diversification brings about a more enduring maintenance of land. And the fact of ruralisation of industry may also bring about certain amount of land retirement to which we referred above. In the light of all these

considerations, we have to welcome the trend towards ruralisation.

City Farming Ranges. Another usage of land, to which only a slight reference was made in the earlier parts of this book, is city farming ranges. Not that the cities do invariably have these ranges and that they are, therefore, a part of city life. But the point is that certain areas may be set apart in the suburban parts of the city for the cultivation of "perishable" crops, so as to ensure a fresh supply to citizens and also to reap a greater advantage out of the same, too. Certain enterprising farmers may settle near the cities to reap the rewards of nearness to the central markets and thus the city farming ranges may come into existence. These "ranges" may relate to dairy farming and the cultivation of vegetables. This has the effect of the diversification of land uses in urban area, and economising of land from rural areas and agriculture. Land, in rural areas, could be retired in view of expansion of the city farming ranges. Then the other point is that these ranges would also extend the sphere of cultivation to urban regions, too. The problems of the marketing of the fresh and perishable produce into distant city markets is not an intriguing problem for farmers who run these ranges. Thus this is the extension of agricultural operation to urban areas, or the urbanisation of agriculture, a trend parallel to ruralisation of industry. In this connection, mention may also be made of vegetable gardening by city residents in their own residential places. This would also lessen the pressure for the provision of necessities of life on the rural lands, for now cities would bear this burden, and share it with the rural areas. Such a trend has good implications for land usage, in view of the fact that usage is much diversified now.

Housing and Recreation, etc. Adverting to other uses of land, we have to speak of the housing, recreation and transport uses of land. Housing is the second most important necessary of life and from this point of view must needs be considered here. As to the recreational uses of land, the rising standard of living elevates it into a necessary of life. Greater stress is being placed these days on housing and recreational needs of the people and greater and costlier schemes are being launched by respective governments in this direction. Another use is that of the utilisation of land for the purposes of constructing roads and railways. A good system of efficient transport is very essential not only for the prosperity of National Agriculture, but also to the advancement of the national economy in general. Marketing problems become easy of solution under a better system of transportation. With the development of the economy, and its

advancement, the one thing that is more and more in demand is transport system for this development is accompanied with the establishment of tertiary industries, as pointed out in the chapter "Elementary Economics". With rising standards of living, the demand has grown for better type of houses and more extensive housing is provided to people. Greater emphasis is placed on the provision of more recreational lands and more land is reserved in urban and rural areas for the provision of more playgrounds and parks and public gardens. Even if population is falling as often happens under the impact of progress and prosperity, the housing requirements and the recreational demands of the community get so upgraded, with the result that more demand is put on the land. Thus these factors also work in the direction of diversification of land usage and towards an intensification of the demand for land. Thus public effort secures private good.

The Inference The conclusion that could be drawn from the above study of urban and rural uses of land, is that the differentiation between the two is now fading out and industrial uses are getting extended to rural areas, while agricultural uses are getting also popular in urban areas. But the more important thing in the distribution of land as between urban and rural uses, is the fact that land is distributed between these uses in accordance with the law of comparative advantage. The conflict between private and public interests in land is considerably reduced when the narrow distinction between the specialised uses of land is not pronounced. From the point of view of agricultural and rural economics, the extension of industry to the rural areas is good, for employment opportunities in the rural areas are multiplied and a balance achieved between agriculture and industry.

Summary The ground covered in this chapter has been rather vast and varied. We have been mainly concerned with the economics of land usage. In the first instance, we found out how the economic aspect of acquiring land was of relevance to the subject in hand, and we investigated into various methods of acquiring land, and their economic implications. Next we had a bird's eye-view of the problem of land usage, and we viewed the subject from the points of view of productivity and conservation, maintenance of land and output input relations of land and the optimum usage of land. We also made reference to productive and the non-productive uses of land in this context. The problems of usage were also looked into, especially from the angles of turnover and return, fertilisers and nutrients and the erosion of land. The question of land improvements was also examined in the perspective of land usages. Thereafter the most important

usage of land, that of cultivation was taken up in its various implications; reference was made to marginal and the sub-marginal lands as also productive and unproductive lands, while mention was made of the intensive and extensive cultivation in the perspective of economic implications. In the next section was examined the problem of private and the public uses of land and it was found that the range of conflict was rather wide and it arose out of several factors, attendant upon the same. The problem was examined from the angle of the maintenance of the soil, population, price-cost structure and technique. In this connection, we also discussed the problem of land management in relation to that of land usage and the problem of land "retirement" in its bearing on this issue. The chapter was rounded off with a study of the distribution of land in the urban and the rural uses; we discovered that the various factors were in a way responsible for the distribution; industrialisation and its expansion to rural areas, and the city farming ranges, and the extension of the means of transport and housing needs of the community. It was found that all the various factors enumerated above contributed to the better stabilisation of the economy.

Conclusion. The conclusion that is pertinent to draw from the above is that the usage of the land is a matter of the operation of the law of comparative advantage and the operation of the welfare economy. As and how the uses of land get diversified it becomes more and more profitable from the purely land standpoint. Land under diverse uses gets exhausted slowly, is maintained better, conserves its resources prospectively and above all adds more to national wealth. Conflict in private and public uses arises out of the dominance of the profit motive on the part of the peasant and his inability to view the problem from the national angle. One thing is that land is limited in quantity and hence great discretion is to be exercised in using the land for various purposes.

CHAPTER XVII

HUMAN BASIS

Farm Functions - Management and Labour Farmer's Dual Role The Personal Factor Farm Labour Agricultural Jobs Economy of Labour Use Types of Labour Nature of Farm Work Work Simplification Division of Labour Labour Efficiency Capacity and Efficiency Factors of Efficiency The Index of Productivity Efficiency and Productivity Labor and Farming Small Units and Labour Large Scale of Cultivation General Consideration Problems of Labour Requirements, Labour Supply Agricultural Population The Structural Composition Malthus and the Modern Movements of Farm Population Effective Labour Supply The Farm Labour Market-Labour Requirements Demand for Labour Impact of Technique The Labour Market Labour Problems Child Labour Labour Relations Labour Attitudes Housing and Wages Other Problems Summary and Conclusions. Human Factor and Farming

The human basis of Agriculture is the most important basis of the industry, for the simple reason that it is run for the benefit of man. In this chapter, we propose to discuss the role that the human agents of production play in the process of farming, as broadly understood. From the strictly economic point of view, the human approach to the problems of Agricultural Economics is the most relevant to the achievement of welfare of the nation in general and the farming community in particular. Agriculture, being run for the good of the nation and the betterment of the farmers, the study of the conditions of the man behind the plough is the most pertinent to the realisation of the objectives in view. It may not be out of place to observe here that the problems relating to agricultural labour are becoming more and more pressing and are increasingly occupying the attention of the statesmen, if only for the reason that agricultural labourers are getting more and more vocal in their demands. And then the realisation has also dawned on men that the lot of agricultural labourers is very bad and must be improved before an overall improvement could be registered in the general economic sphere. If only to effect improvement in the general economy and remove the imbalance in the economy the study of the conditions of agricultural labourers is most urgent. It is from this point of view that the present chapter attacks the problem and seeks to clarify the various issues which becloud the minds of the politicians and the public, for the problem is fraught with the sentimental and irrational approach so common to questions relating to the welfare of man. As an introduction to the problems that we propose to discuss in this chapter, we shall, in the preliminary

section, unravel the fundamentals of farm functions, for without their understanding, a fuller understanding of the problem of the human agent of production is not possible' This section will be followed with an analysis of the agricultural chores, but from the analytical point of view. These twin sections are the most basic from the point of view of clearer understanding and appreciation of the problems in their proper perspective, for unless we examined the nature and character of the farm work and the distinctive characteristics of agricultural chores it would be idle to pretend to be fully equipped with an intimate knowledge of various issues therein.

Farm Functions. Referring first to the functions that the agriculturists have on the farm, we find that they are of a varied sort and have to be performed by the operator in succession; he has to adjust himself to the time-table given to him by Nature. The human element in the field of agriculture is, generally speaking, organised in the units of the farm families. It is family groups that operate on the farm and do the farming chores. In case the families are rather large for the farms, the members may work for other farms, or may take to other subsidiary handiwork or cottage work. In case, the family group is small, hired labour may be arranged. The scope of labour, as understood in the sphere of industry is very much limited in agricultural work, for jobs in agriculture are not a little different in this "industry". It is considered that farm work gets to have a trait of permanency if these operations are undertaken by family units. That is why, perhaps, even when extra labour is hired, the farmer prefers to hire other family groups, for this leads to permanency, and to ease in labour control. The point that we need to appreciate, here, is that the usual unit of labour on the farm is the family and not the single and isolated labourer. Agricultural operations, we remarked earlier, are marked by continuity and the family labour alone could impart that type of permanency without which the farming operations would be upset. The farm functions may be divided into those of management and labour, though this is also not a clear-cut division, for the same operator is often both labourer and manager, still the functions are distinctly separate and have to be recognised as such. Other related functions, that we propose to discuss in this chapter, are those of the personal trait of the farmer. In the sphere of labour, an important part is played by labouring functions, though the management functions do also influence the output of labour and its efficiency. But we do not propose to anticipate the conclusions in the next paragraph and would content ourselves with saying that though the two functions are performed by the same person, the same farm-hand, and the same operator, the fact is that the implications

of these two functions are quite separate and distinct. With these introductory remarks we delve into details.

Management and Labour We may repeat here that the two aspects of management are not clearly distinct except from the functional point of view. The operating organisation is usually democratic, the manager participating in the labourers' chores, while the labourer also makes suggestions for improvement of the farm output and efficiency. Usually, however, the same operator is both farm manager and farm labourer. Again greater regard is there for the advice, rendered by farmers' labourers, in the agricultural sector, than it is in the industrial sector, for the simple reason that the "distance" between farmers and their labourers is not so great as in industry, between its employers and labourers. And then there is also consideration for the suggestions made by labourers, for they may be more experienced in their jobs than the raw farmer, who may have inherited the farm recently. Also, the fact that agricultural production is very complex and the operational side more complex still (there being no standardisation of different operations and not a set time table), all advice is welcome on grounds of its practical utility. The point that we have made in this discussion is that the labour-management functions in the sphere of agriculture are not wide apart. Management functions relate to determining the general policies and effecting supervision of farm work. The first include such questions as the choice of the farm and the selection of crops and other produce. These decisions require the stamp of the manager; these matters are similar in their character to allied interests in the sphere of industry. These questions require careful consideration, for instance, the choice of the site is a problem that faces only the farmer-investor but not the labourer. Similarly, the problem of the selection of the crops also faces the proprietor manager alone for this involves issues wider and more private than could interest the labourer. Again the questions of location, of size and of livestock are also relevant to the farmer but not the labourer. Hence this set of policy functions is related to the management job and not within the labourer's province. Coming to the second set of managerial functions we find that they are mainly supervisory in nature, and include such matters as the projecting of programmes for farm work so as to fit them in with nature's time table. These supervisory functions call for special qualities of alertness of mind which the labourer, absorbed in his work, may not be able to wield efficiently. Certain emergencies may not be met with as and how they arise, this may require a special foresight and vision on the part of farmers. The proper direction of labour is also requisite if good and efficient results are to be

realised. And for the proper direction of labour it is essential that supervisory functions be divorced from the merely labouring functions, for otherwise, the whole thing gets muddled up. In short, though no sharp line could be drawn between the managerial and the labouring functions, we could certainly recognise them by their special characteristics and fields of operation in farming. We may point out that the farming industry is such as calls for qualities, mental and physical, and the farmer has a dual role to play.

The Farmer's Dual Role. The above analysis stresses the dual role that the farmer has to play. He has to be both the manager and the labourer ; and this is truer of the peasant proprietor than of other farmers. They vary greatly in their ability as managers and workmen. One may not be able to come across a farmer who is purely a labourer and not a manager, or one who is discharging only the managerial functions to the exclusion of labouring chores. This is also due to the fact that the various fields and the farms are different in their productive and other capacities. Fertilities also reflect on their efficiencies. Another point is that the aptitudes of farmers also differ. This is responsible for the discharge of managerial and labouring functions in a dissimilar manner by different farmers. Still the dual role of the farmer needs to be emphasised here. The farmer has to discharge several functions all at once ; he has to be an entrepreneur, a labourer, a landlord and even an investor-capitalist. Broadly, his functions are twofold : he is a labourer and also a manager-entrepreneur. It is on the efficient discharge of these twin functions that the success of his enterprise depends. In case, the farmer is an owner he has also to plan the farm enterprises and do most of the labouring chores. The time of the peasant proprietor is nearly equally divided between labour and managerial jobs. For the landlord, the managerial job predominates over labouring odds, as the former are far more numerous for him than for a small farmer ; still, it would be wrong to assert that he is totally free from labouring chores ; he might have to undertake some sort of active work on his farm. This may not be so in the case of the absentee landlord, for this peculiar type is uninterested in his lands. In the case of a tenant, the labouring jobs may be far more important than managerial activities, still the tenant may have to fit in his time-table with that provided by nature ; and admittedly, this is a management function, no doubt. We have to point out in this connection that farming communities have a dual function to perform ; and most of the farming communities are based on the pattern of family groups. Thus typical family farming could be taken as a representative system of farming ; and this system (as we

had the occasion to point out above) is based on the duality of farming functions. In this connection, attention should also be drawn to personal factors in the management cum labouring functions on the farm, for in the ultimate analysis the personal factors, alone, count, too.

Personal Factors Foremost among personal factors, is one that relates to the health and strength of the peasant because the farm work is essentially dependent on the physical capacity of the farmer. Strong muscles are necessary to the successful performance of this work. There is hardly any place for the weaklings on the farm. Second among the essential qualities of a personal nature is the skill for various farming odds. The skill may be the special skill called for in these jobs for that would be an asset in the farming work. But this skill should also be supplemented by a habit to do work at the right time, which in turn requires some amount of foresight on the part of the operator. That means that the farmers should be possessed of clear vision to be able to judge what to do at a given time and what to leave. It may not be too much to expect of him that he should be equipped with some elementary training for the proper discharge of his duties, and be able to act in conformity with economic and commercial trends. This means that the farmer should visualise, in advance, the economic forces that are acting and reacting on agriculture. Possessed of special time sense he must have ability to work to schedule and know what work should be done in a single day and in what manner. Another quality is patience which is a very essential prerequisite in this business as perhaps in no other. The one characteristic is that farming is a struggle with nature, and calls for considerable patience. It would be disastrous if the farmer loses his balance on trifling occasions as this may upset his calculations, and in the end he may have to suffer losses. And last among the special qualities, must be mentioned adaptability and elasticity, he should be able to change according as changing natural conditions demand that of him.

Farm Labour In fact, the human factor, in production, is not much under economic control, in the sense that the rate of the increase of supply of new increments, both qualitatively and quantitatively speaking, is not under human control. We shall have occasion to discuss, in detail, the theories of population and find out how the economy is affected in regard to the growth of population. We have to point out here, that farm labour, in its growth and composition, does affect the nature and trend of agriculture. It does make a difference which labourer is employed, for the human labour is variable both in output and productivity, the total output being influenced by

the way in which different factors of production are combined. It is possible that human factors may improve from generation to generation, not only due to better equipment and other factors but because of the improvement of the educational system. In spite of the pessimism exhibited by the Malthusians, the fact remains that with the spread of education, the efficiency of the farmers and the farm labour definitely improves from generation to generation. The place that labour occupies in agricultural production is not so significant as in the industrial sector; still if we interpret the term "labour" in its wider sense, the part played by it is of the greatest importance for the farmers would also be included in "labour". And with the passage of time, the role of the farm labourers becomes increasingly important.

Agricultural Jobs. Having surveyed the farm functions, we now switch on to study the nature and complexion of agricultural jobs. This study is with reference to the labour aspect. Starting with an examination of the nature of the farm work, we shall see how labour use is economised on the farm and make a descriptive study of the types of farm labour. Work simplification would also receive a sketchy treatment in this section while the important subject of the division of labour on the farm would also be dealt with here. The nature of the farm work is a subject which demands our attention for the simple reason that farming odds are entirely different from factory chore which are more or less of a routine nature, and are also standardised. Farm work is generally of an outdoor nature and timed with natural phenomena. In this sense, nature is of a distinctive character. Special types of labour are, therefore, required for the discharge of farming chores and a study of the types is to complement the exposition of agricultural odds. With the increasing introduction of machinery and its popularisation, the problem of work simplification has assumed a special significance especially in those countries and regions where there is a glut of labour, and where farming needs to be labour-intensive and not capital-intensive. Conflicting opinions prevail and this problem is being hotly debated; though we shall study this issue without reference to special problems in certain countries and regions, still this theoretical background would equip us with a preliminary and basic knowledge of the overall problem in its various facets. This is proposed to be followed by a discussion of the issues attendant on the problem of the Division of Labour. The section is not a complete and self-sufficient unit by itself but only provides a link in the main argument of the chapter. We discuss in this section, the nature of agricultural jobs from the labour point of view, in manifold aspects.

Nature of Farm Work. In this paragraph, the reader's attention is invited to the chapter captioned "Farm Operations", wherein were described farm operations in rather details. Suffice it to notice the fact that farming jobs are of a continuous nature, if undertaken and planned wisely, it is, therefore, that they require the attention of farm labourers continuously. This work is of an outdoor nature and, therefore, requires a special type of labour that is both strenuous and hardy. The labourer must be able to stand the weather, for his job is an outdoor one. Again his work demands skill, not only of the ordinary type, but of a varied type, so that different chores may be performed efficiently. Without putting a premium on farm technique exaggerating facts, or overstating them, we may point out that the man with less varied skill usually earns less than the skilled one, even in such jobs as feeding, the skilled labourers are equipped and get better results than the unskilled ones who may by wrong feeding endanger cattle life. Farm work also calls for ability to give and receive directions and explanations, for without that the whole programme may be jeopardised, the tasks are often spread over a large territory and each workman is more or less self directive in carrying out his work. He should, therefore, be able to hold in his mind the instructions given to him, this is essential for efficient and correct performance of his work. Then farming chores also demand some elementary knowledge of the work in hand, a necessary prerequisite for its correct performance is sound judgment. Again, this type of work also calls for rigid adherence to the plans in hand, for otherwise there would be a chaos. Close attention to farm work is absolutely necessary for an efficient discharge of duties incumbent on the farm worker. Faithfulness to farm interests is another quality to be cultivated for increase of productivity. And then there should be willingness to co operate with neighbours, without this farm would suffer a lot. The nature of farm work is such that good relations are an asset for the efficient discharge of the same. All the various points are deduced from the special nature and distinctive character of this work. The discussion has proceeded from the labour point of view, for the simple reason that the argument relates itself to the human basis of agriculture.

Economy of Labour Use. In this connection, attention needs to be drawn to the economy of labour use, which is planned ahead by a wise farm-entrepreneur. Labour is economised when machines are used, similarly when labour is used effectively, it is "economised". This problem is specially pronounced when population is not high and the distribution of the same in the farm sector relatively meagre. Also a good part

of the land is only stored up labour. Analysing the problem further, we assume that the farmer is his own employer. The objective is to turn out as much as possible ; there are not many other conflicting objectives. The economy of labour use in this particular case would consist in working to his capacity by the conversion of food into physical energy. His work is determined by distribution of his effort and the usefulness of tasks that he undertakes, the time-table that he adopts and other factors of production that also associate with him in his enterprise. Next, we must also recognise the appreciation and depreciation of human labour. A man can work at such a high rate that he soon wears himself out, this means that the rate of depreciation is high. The optimum rate of work would be that at which he is enabled to turn out the largest quantum of work throughout his life-span, this means that the work is to be adjusted to the changing capacity of the worker even in his old age. It is possible that the farm labourer may be depreciating physically as he grows older but the fact remains that depreciation is more than offset by the increasing knowledge and experience that the operator gathers as he advances in years. Again, in the effort to appreciate, the farm labour may actually be wasted, as is done in a wrong system of education, imparted to the sons and daughters of the farmers attending ordinary schools, where education is divorced from the realities of life in rural areas and agricultural sector. Also, the place that farm labour occupies in the motivations of human effort is recognised as pertinent to the economy of labour use. The usual single farm-operator combines in himself the labourer, the manager, the entrepreneur and the investor ; and his economic aim is to secure the largest return from this combination in association with other agents of production. Extending these considerations to the sphere of family labour we find that the only difference is that more emphasis is laid on the appreciation of labour while the objectives and motivations of the family are also to be taken into account. In the case of hired labour, the two different human economies are brought together : the motivations of the farm labourers conflict with the motivations of the farm owners. Good management is responsible for merging of the two conflicting motivations. Enforced servitude is not possible, even though the labourer is not as free, for the need to pay for his family is quite paramount. His chances for advancement in his work compel him to keep in line with suggestions and instructions given to him by the "owner" ; on the other hand, the owner, too, is not able to depend on his employees beyond a certain point, and is not sure of their future and potential conduct. That is probably why most of the employers do not favour the

idea of giving a training to their employees lest they quit for better jobs

Types of Labour In this context we should study the various types of farm labour. There is, in the first instance, the labour of the owner himself, that of the peasant proprietor. This labour is often supplemented by his family. We have already surveyed, in brief, the implications of family labour as in labour uses. Certain it is that faithfulness to the enterprise in the case of this labour is the greatest, there is devotion to the cause of farm work. Single farmer is seldom the case and could not be come across even by the most searching researchers. Next in importance rank hired labourers, who are paid wages on the basis of time they devote or the tasks they perform. These labourers are often seasonal, being employed in the rush season and not kept in employment permanently. It is the routine labour that they perform and seldom given charge of responsible jobs. Usually, these labourers are put in work for specific jobs which are easy to supervise the supervisory work is much minimised. Thirdly, there is the child labour. Boys and girls are usefully employed on the farm for simpler chores. But it may be wondered if the labour they put in does not interfere with their growth and that their schooling is not interrupted. But the belief that the farm will not interfere with their mental growth seems to be well founded, as recent educational practices bear the truth of this belief. Land tenures too have a bearing on the problems and types of farm labourers. Starting with hired labourers, the ambitious labourer goes ahead to become a farmer-operator. It is in this context that the problem of labour assumes a different complexion. The impact of land tenures on the supply and composition of farm labour is considerable, for instance, the increase of tenancy is always co-existent with the increased supply of labour, while the reversion to peasant proprietorship brings about a dearth in the supply of the floating labour force available in the community. To regulate labour is rather difficult for the authorities as the nature of agricultural jobs is hazardous and sporadic. No fixed hours of work obtain nor is it possible to standardise conditions of work for the agricultural labourer. The employer-employee relations are of paramount importance in the sphere of Agricultural Economics.

Employer-Employee Relations In large scale industry, labour relations are often a headache to the employers. As pointed out above, the distance between employers and the employees is considerable and absentee-ownership prevails, but that is not the usual case in agriculture. Agriculture has not the same headaches for the farmer-entrepreneur. Again most labourers

live with the families of the farmers for whom they work. And then the "distance" between the employer and the employee is not so great as to give rise to these problems. Still, it must be conceded that agricultural employers do not possess the same experience in dealing with problems of labour as do the industrial employers. This is the crux of the problem. In fact, the ever-recurrent problem of employer-employee relations is that of the united effort of both the employers and employees in getting the best out of the farm. Employer-employee relations concern Law ; the contract between the employers and their employees is so regulated. But these also depend on the goodwill and the attitude of both parties. In this connection, it must also be re-emphasised that the matters revolve around the simple one of giving correct and detailed instructions to the employees. The employees, like all other humans, are sensitive to their mistakes, and the wise and tactful employer does respect their feelings on this point. This is the first essential of good labour relations, especially on the small farms. On the large-scale farms, the role of the foreman is the one that needs great tact and foresight and understanding of human nature. On these farms, the piece rates and the task rates are favoured, for by this device a full day's work is assessed. But where quality is the main issue, these are discarded in the interests of good and qualitative work. Clear and reasonable specifications and standards of work are set for labourers and rates adjusted accordingly. For good relations, verbal exchange of hot words must be avoided. Systems of the extra bonuses for extra time and extra performance should also be introduced in the interests of happy relations. Grievances are likely to arise between the gangs of labourers and their foremen than when single workers work.

Work Simplification. Before attacking the problem of 'division of labour', the problem of work simplification needs to be attended to first. Here, the object is to move hands no more than is necessary. It may be stated in parenthesis, that the mechanisation of agriculture is not a necessary pre-requisite to the simplification of work in farming work. The strain of work is sought to be reduced by the application of scientific management and its success or otherwise is, to a great extent, dependent on work simplification as on the farm. The rate at which operations are performed is also of great significance in farm work. In this descriptive study, (the analytical study will be taken up in a later chapter), we may emphasise that the natural operational rate could be stepped up by such movements as become worker's habits. The work-place could be so arranged as to reduce the strain on the body and to bring the hands into the most natural contact with work that is sought to be done. Also, the apparatus could be fitted to the task in hand. Again,

whole operations that are regarded as wasteful of his efforts, could be omitted outright. Then the work of the whole labour force is to be pieced in such a manner as to be complementary in itself. In short, work simplification consists in adopting the methods of economising the movements of the body and reducing the strain on the labourer, whether that strain be mental or physical. Apparatus is also developed to suit the task and is so adapted as to bring about work simplification. Extending this further, we find that the size of the holdings could fit in with the size of crews, thus bringing about the optimum both in regard to the crew input and farm output. The maximum output in the minimum time is the aim of work simplification. In the West, motion pictures have been made to teach farm hands the methods of work simplification, so great is the stress laid on work simplification there. Rhythm is also introduced in the work simplification operations, so as to make the twin movements of hands and the muscles concurrent. Mechanical handling of agricultural operations is undertaken. Various steps are taken in this, rearranging the site of work to suit the simplification of work, the improvement of equipment, so as to bring the improved equipment within his means, make it more suitable for him, so as to eliminate the unproductive routine as far as possible, locating correctly the supplies and other things required in the agricultural odds, and lastly, improve the methods of work supervision so as to get the most out of every worker. This may involve a substitution of management for labour, as this extra supervision more than repays its cost, in the way of effecting a saving in the labour bill, and also in the way of shifting some responsibility away from labourer's inexperienced shoulders. Work simplification goes far to ease the burdens of labour and also increases his capacity.

Division of Labour The next, in order of importance, is the subject of division of labour on the farms. We observe, in the first instance, that this concept does not convey the same sense in the sphere of agriculture as in industry, because of the absence of functional division as between the different farm operators. Farm operators are manual workers, masters and administrators performing all the combined functions. The managerial and the operational functions are all very much intermingled and mixed up. Farming is usually small scale and therefore, the division of labour is very much limited, too. Because of the predominance of the small scale, the distinction between the managerial and the operational functions is very dim. In this regard the difference between the factory and the farm is rather distinct. Farm operations are of a biological nature, and depend on the successive stages of the growth of crops and animals, this makes it impossible to

introduce routine tasks such as may be exclusive of other jobs. Regularity and continuity are not characteristic of farm work. Also the labour force on a farm is generally small compared with factory staff; and it operates scattered on a very large space while the factory staff works within the four walls. This enables greater division of labour, introduced in factory organisation. Still some intensive division of labour may be introduced on large farms, and we may come across such specialised functionaries as shepherds, dairymen and the tractor-operators. But even these "specialists" can take up other types of work in addition to their own, (if need be); thus the division of work and specialisation is not of an exclusive type on the farm. Specialisation on the farm is limited because of the fact that farmers (at least a majority of them) do not have enough land nor even enough capital to invest: they could not continue to work full departments to the optimum standards for the whole-time employment of their "specialists". Seldom are specialists employed on single farms; they may, however, be co-operatively employed. Specialist farms are, in a sense, a form of agricultural division of labour. There are often the dairy farms, poultry farms, sheep farms and cattle ranches; these are instances of specialisation in agriculture. In the sphere of integrated farming, too, division of labour may be practised in an extended sense. That may be vertical division of labour, as understood in Economics. Many farmers, in advanced countries, have begun to produce agricultural stuff, in combination, so that the finished product is the result of the combined efforts of many farmers. But the conclusion, that division of labour is limited as on the farm, seems to be irresistible, for the various functions are often fused together.

Labour Efficiency. Having surveyed various problems of agriculture in their relation to farm labour, it is pertinent to enquire into the causes of labour efficiency and the impact of the same on farm work. We have, in an earlier chapter, studied concepts that we apply to the sphere of labour. We differentiated between the twin concepts of capacity and efficiency; and saw that productivity of labour is the resultant of efficiency and capacity of labour. Generally speaking, an increase in the efficiency of labour could be brought about by the improvement of the labourer's own output, or by that of structural and organizational factors on the farm itself. We have already considered the second set of factors, but not the first part of labour productivity. It would repay our study, if we reckoned how far it depends on the workers themselves and to what extent it is the result of directional factors. The problem of the improved efficiency of labour is of superlative importance in the sphere of agriculture, for the simple reason that there is little division of labour on the farm, which is itself very small.

in scope, as compared to the manufacturing industries, where greater division of labour is practised. This means that greater demands are made on the worker who must exhibit high personal responsibility and also willingness to work with a greater ability. In a paragraph above, we did emphasise human and personal factors, contributing to productivity of farm labour and stressed the invaluable qualities of willingness and the sense of responsibility in farm workers. On the small and medium sized farms especially, it is the personal interest of the farmer and his family, that ensures greater productivity and also enthuses the farm labourers. The conditions of work and the scale of remuneration will also go far to bring greater willingness and sense of responsibility from the workers. Regarding the wide range of technical ability, we have to remember varied and multiple nature of farm work, the workers on the farms have to use not only physical strength, but also some skill crop and livestock sense. Farm work, in fact, is something remote from specialist work. Routine duties of the farmer constitute most varied and multiple jobs on the farm. In a broad sense the efficiency of the farmer would depend on physical and mental fitness and alertness of the worker as also on his training and experience. But we are anticipating, in this introductory paragraph, arguments and conclusions, developed in the paras below.

Capacity and Efficiency Before we proceed to investigate the causes responsible for efficiency of labour, it would be proper to distinguish between the twin concepts of capacity and efficiency, at least we must refresh our knowledge of the same. We have already defined capacity as the power to receive or associate with the other factors of production. This means that capacity refers to input, and not to output. Wide range of differences exist in men with respect to the amounts of land labour and capital they could operate. Certain operators could work on much bigger acreage, while others could not. At the same time, certain pieces of land require greater effort which need not be expended on other pieces, this means that these lands would require labour with greater capacity to work on them than other lands. In this sense, capacity would by itself not imply anything, unless taken in conjunction with efficiency. Efficiency is to be distinguished from capacity in that the former relates to the output of labour, while the latter to input. Efficiency refers to the output per unit of input and not to the total output and is to be thought of as the value of the product per unit of other factors of production such as land capital etc, when associated in the most profitable (or optimum) proportions. Capacity is thus related to efficiency, for the calculation of efficiency is possible on the basis of capacity. Different pieces of land may

yield widely different results per unit of labour expended on them ; similarly, two labourers may also be different in production when combined with the same quantity of other factors of production. These two labourers are said to vary in efficiency. From another angle, the total product when divided by capacity equals efficiency. It would be idle to pretend that these terms are used with reference to labour alone ; as pointed out in an earlier chapter, they do relate themselves to other factors of production, too. But the present discussion refers to labour ; hence we have taken these examples. The point that needs stressing is that factors possessing high efficiency must be combined with labour of high efficiency. But more of this in a later chapter, on "combination of factors".

Factors of Efficiency. Having grasped the distinction between capacity and efficiency, we now proceed to unravel the concept further. In this regard, attention should be focussed on mental and physical qualities of workers, for both these have a bearing on farmer's technical ability, which we may interpret as being synonymous with efficiency. This ability is dependent on mental and physical fitness and alertness of the farmer, otherwise the farming work could not be successfully carried out. Farming job is outdoor and calls for good physical and mental capabilities. This type of work also requires constant braving of the inclemencies of weather. As regards technical ability, this depends on his training and experience. Training and education are important, for with the progress of agricultural technique, its mastery has already become a function of training and education with the farm entrepreneur. The empirical method of learning (by means of trial and error) is no longer favoured by modern agricultural opinion. In the modernised farming system, formal training is of no avail, and has to be substituted by more intense and detailed training and instruction. In the factory, the development of technique tends to make task simpler and facilitates the introduction of machinery, but on the farm the introduction of improved technique means that the operator must possess progressively higher and higher standards of skill and intelligence. It is only a very intelligent farmer who could be trusted to operate the specialised farm machinery, and not the illiterate one. Efficiency, therefore, depends on personal factors inherent in farm labour. Efficiency depends also on the management of farm labour, for efficient labour is wasted if not efficiently managed. This aspect of the problem is of a threefold nature : planning, assignment and assessment. The first stage is planning which involves the twin considerations of keeping labourers fully employed to the best advantage. The success of a farm enterprise depends on the timing of operations ; certain jobs

could be postponed but not certain others without detriment to these operations, and farm produce. Hence chalking out alternative programmes for under-employed labour is a task beset with insuperable difficulties because of the seasonal character of farm work. What the farmer could do is to time various operations in accord with the biological and natural requirements of the various enterprises undertaken. Planning ahead of the times is rather difficult for him, in view of the difficulties about anticipating the correct climatic conditions and the right natural phenomena. Still, planning is essential even though the farmer has to alter the same in response to the changes enforced by nature. In regard to the second stage, i.e. that of assignment, we have to observe that this business is also incumbent upon the owner if he wants to get the best out of the labour he employs, for the right man in the right place and in the right job would amply repay him. In the factory, it is the machine that sets the pace and everything is completely routinised, and labour is well acquainted with the daily routine. But on the farm, things are not a little different, for the absentee owner may not even be aware of the routine, and, therefore, unable to assign multifarious duties to various workers. Rough estimates of the time-consumption of various chores are known to farmers, that makes the task of supervision easier for them. This leads us to *assessment* under this heading we study how the farmer uses clumsier yardsticks. And that is why the traditional ways of work have been perpetuated in the agricultural sphere. Recently, however, much attention has been devoted to the investigation of the psychological factors responsible for the increase of efficiency, and also to the farm layout in its impact on efficiency factors. We have already studied the influence of organisation on farm efficiency.

The Index of Efficiency & Productivity In an earlier chapter we defined productivity as the product of capacity and efficiency. In this regard, we have to invite attention to the resultant of efficiency and capacity. If the capacity of labour increases the productivity is bound to rise, also if the efficiency heightens, then too, productivity rises. Efficiency being the ratio between the energy put in and the results secured, productivity is a function of efficiency. In other words, the twin concepts of capacity and efficiency are the twin dimensions of productivity. The indices of productivity are either in terms of acreage or in terms of labour or in terms of the produce of land. From the labour point of view, productivity indices are in terms of man-hour units. We might reckon productivity as a ratio of labour input (measured in terms of man hours) to the total produce. Also the physical produce per unit of labour is another measure of productivity, but this is more or less for the

urposes of comparison. One should clearly bear in mind that capacities, efficiencies, and productivities, all vary with prices, which in turn vary with the supplies of the input factors available and the demand of the product. More of this analysis in a chapter on the pricing process. Physical input-output relations, however, must be understood as a preliminary to the understanding and appreciation of economic measurements, for it is the physical relations which in turn, have a bearing on the economic ones. *Net Productivity* is what we have, after meeting all expenses of production; *net efficiency* is found out after we have deducted overhead charges; it is efficiency at the optimum point. Capacities and efficiencies of workers, and supervisors, are not to be considered as fixed and rigid; therefore, the productivities, too must not be considered as fixed and immutable. With younger hands, who could be trained for better work, efficiencies and capacities could be varied quite a little, if the efforts to that end are intelligent and well directed. Only by increasing the efficiency of the farmer could he hope to accumulate some capital with which to acquire more land and other resources. But a worker may be inefficient only because he has to labour under overwrought conditions. In order to maximise the productivity of labour the effort should be to combine only those factors that have the maximum capacity and the maximum efficiency. Good management consists in the selection of more efficient and more capable labourers for the performance of agricultural odds. A clear understanding of relationships between capacity, efficiency and productivity is helpful in maximising output or productivity of farm enterprise. This clearer understanding also enables him to analyse matters more closely and more precisely. It may be conceded that labour productivity is not dependent only on the factors concerning labour alone, but also several others "extraneous" to it, or remote from the labourer's purview. Normally, the more efficient farmer should be permitted to cultivate.

Labour and Farming. The labour requirements of various types of farming are variable. In this connection we need differentiate between various types, such as family farms, the middle-size farms and large-scale farms. The labour requirements are variable with the size of the farm. True, that variations arise with different cropping systems, which also is to be taken into consideration. The main difference is that these requirements differ with farm size, as far as the quantity of labour input goes; normally the larger the size of the farm, the greater is the demand for labour there, but the composition of a labour force depends on various farm types. Usually, the labourer is a member of the farmer's family and relations (as pointed

out earlier in this chapter) between him and the employer are not strained, as in industry. Not that there are no problems facing the farm management but the complexity of these problems is not a little different from that in the industrial sphere. On the speciality farms these requirements are of a qualitative nature. In short, the labour requirements are in accord with the size of a farm. One reason that appears pertinent is that speciality farms are cultivated on account of the aptitude of the farmer and in accord with his training; therefore, the demand for labour is not very different from that on the other farms. The ordinary farms, unless they are very big (even when they are speciality farms) could not afford to employ skilled labour but content themselves with unskilled labour. Hence we have to take account of the labour requirements from the *scale* point of view and not from that of speciality.

Family Farms & Labour Starting with the assumption that the family farm is large enough to use the labour of the owner and his family, we find that the supply of the family labour is not something which automatically adjusts itself to the farm size. In the first instance, a family is not a stationary unit; it is also variable in size and often goes through a cycle. The family grows and some of the members may leave for the purposes of schooling or for settlement in some urban areas. It is impossible to fit in a farm with the changing size of the farm-family. In case the farmer starts out with a sufficiently large farm to suit the labour supply of his family, he may need to hire more labour while his boys are growing up and probably again when the family members go out for settlement elsewhere. A wise farmer would start with a small farm, and later on exchange it in return for a larger and bigger one to suit his growing family. But with the farmer, family labour supply alone does not count, he has other considerations to reckon with, for example, his resources, finance, etc. In the case of a rentier, the change of the farms may be easier, but not so in the case of owners. Family labour supply is more or less a determinant of the size of the family farm, though the two could not be kept in accord with each other. In backward communities, the educational programmes of the family are of no account; hence, labour supply of the family farm could be easily anticipated. Often it happens that while with the passage of time the size of family grows, but not the size of the farm, with the result that the pressure of population on a farm rises and farming gets to be an uneconomic proposition. Some of the wise family farmers resort to supplementary projects for the employment of the growing family; they might add dairy farming or horticulture to usual agricultural pursuits. Or even regular enterprises may be intensified. Simple budget analysis

enables people to assess various alternatives vis-a-vis employment of the family labour. The family knows, by this analysis, the cost of following a certain course of action and sacrifice involved. Such an analysis is useful in making certain decisions. In case, the family is expansive, a labour-intensive course of enterprise may be followed by him, instead of a capital-intensive one. This means that the farmer may employ more labour instead of machinery and the equipment that he normally may like to. The labour-intensive system of farming enables him to utilise more labour; the absorption of parasitic labour (of the family) is often a headache. Of course, a more enlightened way is to expand the farm business, to shorten the hours of labour, to relieve the odds in the household, to grow more vegetables and fruits and to improve the appearance of the farm and the barns, etc. But the conclusion, that the family farms would be less inclined to adopt the policy of work simplification, (at least as long as there is surplus and parasitic labour in the family) seems to be more or less irresistible. This is truer of expanding families.

Small Units & Labour. On small units, the problems of labour are not a little different: again the variations in regard to labour accord to the size of the farming enterprise. On the very tiny farms, the requirements in regard to extra labour are confined to "rush" seasons only. On farms, which are a little bigger, the employment of one or two extra hands is a usual feature; and though the nature of the problem varies somewhat with the number of the workers employed; still, the fundamentals remain the same. The first problem that faces him is how much extra labour (help) to hire. Sometimes this is required for very short periods of time, only for peak seasons; but that is also a problem, in that the peak period in one farm coincides with the peak and the rush period on the others; it is peak and rush season all round. This may raise complication of high wages which may be demanded (in the rush season) by labourers working casually. And the adjustment is not so easy to effect especially when the farmer tried to so adjust his labour requirements to the seasonal demand and supply of labour. In this case, he has to weigh whether this extra hiring is useful from the purely accountancy point of view; if the payment to labour in the form of wages (both in cash and kind) is more than covered by returns therefrom, he would be inclined to go for the same and employ labour in the "rush" season. Extra labour is also employed for the purposes of giving relief to family labour who may reduce their working hours with the employment of casual labour as in the peak season. Hiring labour on the year-round basis involves similar considerations, though in a more pronounced form. The year-round labour

is of a better quality, more skilled and more responsible. And where skilled and responsible labour is required the usual method is to employ them on a permanent basis for the workers of this type want to be assured of security of tenure and service. How much of this labour should be employed depends on the farm size which again is determined by his resources and abilities. The marginal principle is applied here and the farmer calculates on the basis of the marginal cost of labour to be covered by the returns on the margin. The same principle applies to the expansion of a firm. If an additional hand employed costs more than what he is able to contribute, the employment of an extra labourer is unjustified. Seasonal contracts are also undertaken and executed by a farmer in search of extra labour. In this case the level of wages depends on the prospects of finding other jobs in the "off season". But this labour force is not dependable, unless a contract is entered into and is binding on both the parties. Even then casual labour has not the same interest in a farm as the permanent type would have. Regarding wage rates, the prevailing ones are paid, but even these are not fixed. The reason is that the farm labour market is usually disorganized and not competitive, moreover wages are dominated by custom and tradition. Public employment offices and exchanges could narrow the range of wage fluctuations. Lower wages are usually paid for boys and older hands children and women, and they may be treated as fractional labourers. But this is not the place to analyse farm wages.

Labour and Large Scale On the larger-sized farms the owner does not work with his workers. he is usually an absentee proprietor. Secondly, he employs a foreman or supervisor to assess labour input and to see that labourers do not waste their time. Thirdly there is some amount of division of labour on these farms and mechanisation is much extended than on the smaller farms. These two are interlinked, as without the division of labour, the extent of mechanisation is much limited, that is theoretically proven and we need not repeat the argument advanced earlier in the chapter on "Elementary Economics". Fourthly, the labour force works in gangs and groups and not as isolated individuals. And lastly, the labour employed is of various grades and qualities all of it is not unskilled and unspecialised, because the range of work (on these farms) is wide and admits of various qualities of labour being usefully employed. Some distinctive traits of these farms may be enumerated here in order to grasp the problem in its fuller implications. Most large-sized farms are the speciality types, they admit of special operations with the result that the demand for labour is highly specialized, the year-round labour force is skilled and the wage

bill, consequently, very high. Second important characteristic is that some of the employees are of managerial types or supervisory grades. Thirdly, most of these farms use *peak-load* labour, who must be paid enough to compensate them for the time lost between jobs. Fourthly, the large-sized farm labour requirements are of a stable type and do not (appreciably) fluctuate as yet been various seasons, for larger farms usually plan various operations in such a manner as to make them complementary so that the maximum is reaped out of the same farm all the year round. In the light of the above the labour requirements, both qualitative and quantitative, are not a little different from those on the other farms. On these farms alone, are labour requirements of a qualitative nature and problems of a special nature. Mechanisation raises a host of issues arising out of the displacement of labour by machinery and the cost of mechanical appliances employed thereon. The employment and selection of the manager and the foreman is eventful, for on this hinges labour efficiency and, therefore, the productivity of farm enterprise. A correct division of labour is responsible for the improvement of farm productivity, it is to be in accord with mechanical appliances and their utilisation requires some experience and knowledge of the farm technique to implement it. We shall have occasion to examine, in detail, the mechanical requirements; suffice it to notice that the employment of labour and machinery needs to be in accord with operational demands. Also the working of labour force in gangs and groups involves special considerations, their efficient working rests on the understanding of group psychology and the incentives afforded thereto. The conclusion seems to be that the level of the wages on the larger farms is usually high; this is also borne out by studies undertaken in this respect. Another corollary is that the drive for mechanisation is rather intense on the larger farms than on others.

General Considerations. Coming now to general considerations, attendant upon the employment of labour on farms, we discover that the problems are mostly of a common character. These are common to all human relations and have to be taken as such. In the first instance, we must admit that the hours of labour are unregulated and especially excessive in the peak season; being shorter in the winter and longer in the summer, for obvious reasons. Farm work is different from factory work in this respect. Long hours of work are taken for granted on the farm and the farm workers, in co-operation with farm-families, put in long hours ungrudgingly. Farmers have to finish farming odds within the particular seasons; or the produce would go rot and become unmarketable, too. He does not mind even working at night, for the task must be finished within the specified time, which is often shortened by the inclemencies of the

weather. And the load of work on the farm is very heavy indeed for the simple reason that outdoor conditions do not remain even overtime, this by itself, makes the habit of working excessive hours enduring with farmers. There is usually an off-season with the farmers who, therefore, do not mind putting in long and excessive hours of work for a short span. And the longer hours of work are easier to endure in outdoor conditions than in the factory atmosphere. In regard to housing the usual practice appears to be to lodge hired labourers with owner-employers. But to the migrant workers and the casual labourers housing presents a rather difficult problem though on larger farms, some permanent form of living accommodation is usually provided to attract labourers. In the West, where mechanisation has proceeded apace and the possibility of having trailers is not remote, with their employment the problem of migrant labour does not present any difficulties. Decasualisation of labour is often advocated by labour experts, as schooling of migrant children suffers much. Central construction of housing for this type of labour is also advised, but this is an important constituent in labour costs. But the problem could be tackled if labour force is of a permanent nature and tenure for the large scale farmer would not mind the extra expense incurred if that would ensure him a stable labour supply of an efficient character. Another consideration is the extension of the housing facilities to the rural areas though this is not in priority in the minds of the public and the authorities concerned. Hutments may be provided to a migrant labour force out of public funds but the fact that farm labour is less vocal than industrial labour is responsible for this neglect. Another problem is that of wage fixing by public authorities, attempts have been made in this direction in the United Kingdom and the other progressive countries, the British Boards determine both wages and the conditions of work on agricultural farms and claim to have done a lot in this direction. But the fact that the nature of work in agriculture is outdoor and that there is no trade unionism of strong type in the farming avocations is responsible for the non-enforcement of wage and other labour legislation enacted for the benefit of farm workers. Still, the one good that is likely to come out of such legislation is that it would pave the way for the ultimate betterment of agricultural labourers.

Labour Requirements Labour requirements may now be analysed, as they are related to labour problems in general. As pointed out above, the requirements of labour vary with the size of the farm and their enterprise. Other determining influences are the system of farming and the degree of technological development. The larger the size of the farm, the greater the

requirement of labour; this is usually the case, although on the more mechanised farms, the labour requirements may not be so high. The highest employment of labour is found on intensive farms. But the variations of demand for labour are influenced also by the nature of farm enterprise, for certain enterprises demand more labour than others; labour requirements in the matter of the market-garden crops are the heaviest. The type of livestock kept also determines the labour requirements, for example, dairy farming strains labour requirements more heavily than cattle ranching. It may be pointed out here that the requirements in the matter of specialists are very meagre in farming for the simple reason that the average size of a farming enterprise is not very large, it is the small scale that prevails in the sphere of agriculture. There are very few farms that could afford to employ full-time specialists and could keep them fully employed. Seasonal variations also exist in the requirements of labour; in the rush and the peak seasons (already adverted to) the demand for labour is very heavy. Seasonal requirements may vary from year to year and during the same season. The reason for the first is that croppage and yield in respect of certain crops and produce varies as between different years, certain crops may yield more in alternate years, therefore, in these years the demand for labour may be heavy. But the range of such variations tends to be minimised and narrowed with the increasing application of science to agriculture. Still, the seasonal and the daily fluctuations in labour requirements are increasing—a difficult problem in agricultural employments. Crops have peak requirements for labour both at planting and at harvesting seasons. The peak seasons are followed by slack, and dead seasons. But in the peak seasons so heavy is the demand for labour that the whole labour force may be unable to cope with the situation. In the matter of livestock farming, too, the rush seasons are there, for example, the lambing and the shearing seasons for sheep. Fluctuations here are from day to day, and not merely seasonal. In the sphere of dairy-farming, especially, the milking time is the rush time, when more labour is required. The nature of the problem is essentially the same, that of utilizing the underemployed labour force during the off season; and that of adjusting the size of the labour force so as to avoid overstaffing, for while the former leads to waste, the latter results in overwork, both these are undesirable. Usually, the difficulty is overcome by so fitting in the enterprises that the demand for labour dovetails ensuring optimum distribution of work throughout. Or it could be solved by keeping the very minimum staff and employing extra hands during the peak and rush seasons. The first method relates to farm management with aspects wider than those of

labour alone. But the second method poses the problems of casual labour, which by itself is not quite desirable in view of the evils attendant on the casualisation of labour. There is yet a third method, that of co-operative effort put in by the farmers during the rush periods. This solves the problem of the rush period and may not raise the question of casual labour either. This pooling of the labour also solves problems arising out of scarcity of labour and the overcrowding on the farm, as might often happen in countries with excess population. Sometimes the state or some public authorities might arrange for the immigration of labour to places where the rush season has started in the right earnest—a better distribution of labour might be effected by outside authorities, and this may be done on the basis of contract. Overtime work may appear to be another solution. But this is not so on closer examination, for overtime in agriculture means the extension of the working day. Already the farmer works to the completest possible length of time. Overtime in this sense is without any significance, for the hours of labour in agriculture are more or less unregulated. In the rush season, the farmer does not work leisurely but at the fullest tempo. Farm work is regarded as continually endless, especially in rush time.

Labour Supply Having sifted the problems relating to the employment and busy-ness of the labour force on the various types of farms it is not out of place to view closely problems relating to supply of labour. Mainly, supply of agricultural labour force depends on the total size of agricultural population in the community and the ratio of the active population to the total. The agricultural population of the world amounts to nearly two thirds of the total population. This means that agriculture is by far the largest industry and the most popular occupation in the world. Agriculture provides employment to the largest part of the world's population and the greater part of mankind. Human progress is, therefore, linked with the one attained in the sphere of agriculture. But the fact is just the opposite for the greatest economic and material progress has occurred in those countries in which the proportion of the agricultural population is the lowest. It only means that over-employment in agricultural pursuits is a waste of human labour, and its misuse. The question of labour supply to the agricultural sector, therefore depends on the ratio of the agricultural population to the total or on the preference of the people for the agricultural pursuits. The rural population is mostly having a surplus which raises a problem for the rural economy. Farmers tend to multiply faster than urbanites, with the result that migration movements have been city-wards. Another thing to be noticed is that they are not so well informed about current

affairs as the townsmen. Farmers have been too much stay-at-home and know little of what goes on in the world, it is because of this fact that the rural countrymen are cut off from the outside world. They do not enjoy the benefits of a modern system of communication. The usual farm boy is brought up in environments where there is little progressive companionship for him. He grows the habit of spending too little and remains comparatively unconnected. A study of social mobility would indicate that chances of a farm boy's climbing up the social scale are rather remote; the farmers show a poor rating in this regard. Farmers, along with labourers, have few distinguished children. In regard to labour supply, it may also be pointed out that the costs of rearing children in rural areas are rather low, at least lower than what they are in the urban areas. The trend of population in the countryside is usually towards the incline, because rural needs compel men to get married. And the children marry at an early age as they expect to gain in companionship and in having a helping hand when married. Their education finishes early and they do not have any other business to take to. Then child rearing also begins rather early, for the costs of raising children are quite low. It means that the multiplication takes place at a more rapid pace than in urban areas. With the increasing use of steam and electric appliances on the farm, there arise economies in the use of labour force, and the problem of surplus population is quite a headache.

Status of Agricultural Population. A study of population statistics would throw some light on its status. The fact stands that its status differs from country to country inasmuch as population statistics are widely different, still some generalisations could be made. It could be safely said that family labour predominates in the sphere of agriculture. The ratio of the hired labour to it is very low. Most farms are of small size; and, therefore, run manned by owners themselves, in active assistance from their families. This overdependence of the agricultural pursuits on family labour has far-reaching consequences. The labour that is actually used is determined by the size of the family rather than the actual requirements, this results in either over-staffing, or under-staffing, for it could not be possible that a farm be sized to labour supply drawn from the family. We have already stressed the fact that the supply of effective labour from the family is not constant either; this labour supply is fluctuating, too. Even if one started with perfect equilibrium in this respect maladjustments would certainly be noticeable in course of time. The second economic implication is that family labour is outside the orbit of legislation; such interference could not be effective therein. Wages, hours of work and other conditions of employment, as regulated by the legislating au-

rity and the executive, could be hardly enforced in a family, which is a compact unit outside the scope of such legislation, even if legislative interference was to be sought. And the impact of the same on an industry, which has often to work for irregular hours is significant. Agriculture is such an industry which works by spurts. And then the costs of family labour are not easily assessed, the assessment process would be arbitrary. Family labour is not on the commercial plane and the cash outlay involved in the employment of the same is not easily possible of assessment. This accounts for the continuation of uneconomic enterprises on family farms, for labour costs are "negligible" and not counted. The second characteristic is the fusion of the managerial and manual functions. Little distinction could be made between the two functions especially on small producing units that predominate in the agricultural sector. Very few farms, indeed, are concerned with the division of the twin functions and fewer farmers could make a clear distinction between them. Time is devoted, indistinguishably, to both. This means that specialisation is not possible nor perhaps desirable for even if after so much specialisation, the farmer has to undertake both the jobs, there is little use in such an undertaking. The problem may be posed in this manner: does the industry stand to gain from the specialisation of functions and a dispersion of the same, as between the different operators? The answer is not so simple, but it may be repeated that farm work is of a continuous nature and hence the dispersion of functions is far from useful from the productive angle. Dispersion is likely to hit at the continuity and integral character of farm work. A third characteristic and determinant of the status of agricultural labour force is the fact that the scope of division of labour is very much limited. Some degree of division of labour may be practised but that is only on large and specialist farms, not the ordinary farms. This also means that the agricultural population is mostly of a homogeneous character and not divided into distinct strata. Still, because of the fusion of functions the relatively small number of the staff and the comparative absence of the division of labour, the status of the agricultural and farm workers is not very high, the farmer is an all-in-one person and expected to perform most functions.

The Structural Composition The structural composition of agricultural population is of relevance to the problem in hand, for it does influence, in a very pertinent manner, the complexion of agricultural activities. With a larger working population, the manpower available in this sector is high. But this is to be considered in respect of land available for the purposes of tillage, or the scope of the other agricultural operations and enterprises. If the land available for the purposes of cultiva-

tion is sufficient for the labour force, the problem does not assume serious proportions, but if land available for tillage is insufficient, problems of a serious nature arise. Similarly, if agricultural and rural enterprises are fairly elastic in their scope, the population would be gainfully employed, on the other hand, if their scope is rather rigid, masses would not be fully employed and the serious problems of rural unemployment would face the society. The composition of the rural population is this: absentee (non-working) landlords, working owners, labour force, tenants, craftsmen and servants of the village society. The first category relates to persons who do not participate in farm work; but this is a declining tribe, as the present trend is towards the abolition of the non-working drone and of the institutions incidental thereto. This section of the population is quite insignificant in numbers though prominent in its influence on the rural society. The second class is that of working owners, or peasant proprietors. We have discussed the role this class plays in the socio-economic hierarchy of a village, and we need not repeat the implications of the system of family farming and middle-sized farming in their labour requirements and their status in the rural set-up. The third component is the labour force, where significantly active. This group is either casual or permanent, skilled or unskilled. We have surveyed the implications of the various types of labour in the village, but it may be pointed out that they are no longer so silent as before and that greater attention is now being paid to their welfare than ever before. In certain countries, their number is considerable, while in other countries they are meagre and unable to meet the requirements of agriculture. But the more usual fact is that the labour force is sufficiently surplus in respect of the requirements of farm work, though it is possible that the skilled sector may be limited and unable to meet the requirements of agriculture. The next class is the tenants; we shall have occasion to study the tenancy problems in a separate chapter, but suffice it to point out here that the tenants are also a declining race, for they are being upgraded to the status of owner-farmers, by modern welfare states. Tenancy is coincidental with the institution of landlordism and with the decline of landlordism, tenancy is also on the wane. Still, tenants are a constituent of farming populations in the countryside, unless upgraded to the higher status. Craftsmen have always been a force in the social structure of the village. They have been responsible for making the village self-sufficient in some respects. They have also provided the farmer with cheap service in the provision of the necessities of life and the maintenance of the implements of agriculture. But recent rural migration movements have been responsible for driving the village craftsmen to-

the urban areas in search of employment, their crafts have suffered at the hands of machine competition and they have either migrated to the towns or become labourers or tenants. But their stay in the rural areas has had a healthy influence for the economic stability of the rural economy. The last category of menials is persistent only in the backward areas, and the tendency is towards an elevation of these "servants".

Malthus and the Moderns It would be instructive to study the population theories that have a bearing on agriculture. Malthus offered an explanation for the growth of population. This explanation is still applicable in most agrarian communities and is, therefore, of importance even in the modern economic and demographic literature. He tried to correlate population to the supply of food and other resources in the economy. He pointed out that food supply was outrun by a speedier growth of population. Mathematical formula for the growth of the population were given, the geometrical progression was said to govern population trend while the arithmetical progression food supply. Though it has not been possible to verify these ratios in population growth, the fact that population tends to outpace food supplies could hardly be denied. This applies with greater force in the communities which have a backward system of agriculture and farming subject to the Law of Diminishing Returns. He, therefore, advised human beings to restrict their numbers in the interests of maintaining their standards of living. One thing borne out by experience is the fact that the increase of population is mostly at the wrong end, the poor people who can ill afford to bring up and educate their children properly, are multiplying faster than other sections. Most farmers belong to poorer sections, hence they multiply much faster than do other sections of the community. We have, incidentally, noted above the contributory factors responsible for the growth of population in rural areas, e.g., the lower costs of upbringing etc. But modern economists have discarded the theory of Malthus for it has not been verified by the demographic history of recent time, his gloomy forebodings have been falsified, at least in the West. And the law of diminishing returns that was the basis of his thesis can be countered by modern scientific technique applied increasingly to agriculture. And then it is argued that the increase in wealth in a country could bring in greater food imports for the country in question. On these and other grounds this theory has been shelved aside and the moderns have implicit faith in the Optimum Theory of Population, which applies the concept of the optimum to the sphere of population. The optimum of population is defined as that at which the per capita income is the highest. A country is said to be underpopulated if the population is below the optimum (i.e., what it should be).

its per capita income would increase if its population increased. Some tasks remain unattended, and the resources unexploited for want of adequate labour supply. On the other hand, overpopulation would mean too much pressure of population on land and because of the excess, the per capita income falls. In fact, some of the resources may be damaged; while others may not be sufficient for the needs of the population; consequently, the standards of living would fall. It may be pointed out that the optimum is not a fixed but a movable point, for in the event of the resources of the country expanding or better used the optimum would permit population to expand, too. But the optimum is likely to register a fall, if the resources get exhausted or damaged. Dr. Dalton has attached special importance to the optimum theory as being a dynamic explanation of demographic phenomena.

Movements of Farm Population. The effective farm population is influenced by the trend of the farm movements which are of several types. We do not intend to include in this analysis exceptional and abnormal movements caused by the conditions of war or other political factors. There is the movement from one country to another; this movement may be occasioned by economic and other allied opportunities in another country. But these treks are now restricted by the enforcement of various immigration laws and other restrictive quarantine practices. The main issue in this regard is not one of movement but of absorption and settlement, adjustment and naturalisation in the country of adoption. This movement, while it depletes the manpower resources in the country of emigration reinforces the manpower resources in the country of immigration. But whether the new settlers would be welcome in the new country or not depends on whether the optimum has been reached in that country or not. If the optimum has been reached, the newer population is most unwelcome; while if the country is underpopulated (in the light of the modern theory of population) the settlers would be a welcome addition to the present numbers. The second movement is from farm to industry: this movement has not been so quick as circumstances may warrant, probably because of the relative preference of agriculturists for their industry. Theoretically speaking, an extension of economic opportunities provides a spurt to the mobility of agriculturists. Still, it has not been fast enough to bring about any serious shortage in agricultural labour. But with the ruralisation of industry, the mobility of agricultural surplus labour from the rank of the cultivators to the labour force in the industry has been rather pronounced and this, too, has not caused any serious shortage in the ranks of agricultural labour. Third is the movement of

agricultural population from country to urban areas, a problem that is similar in essentials to the one described above. The more important aspect of the same is one of a switch over from rural to urban living, this has been fraught with the new meaning given to living standards in rural and urban areas. How far is new rural living, (with which are associated various amenities of life), related to agriculture and farm production? For the traffic is both ways, that of the older and excessive surplus farm population to urban areas and that of retired urbanites to the countryside in search of peace and solitude. The former eases the pressure of population on land, while the latter trend does not in any way add to that pressure. Fourthly, there is the movement that has been going on between poor land and good land both on the national and the international plane. Mainly, it happens that the new settlers settle on the poorer grades of land. But this kind of movement is not one of the more important aspects of population movements in a country, for it is an individual movement without involving any question of public policy, except where poor land is neglected and land hunger is so strong that land prices are rising fast with bad consequences. The public authority may be keen that resources in respect of poor land are neglected but exploited to the fullest possible. Fifthly, we have age mobility, people in an active age group may move to other occupations and other countries in search of better prospects. This type of mobility is obviously harmful to agricultural interests in that tillage is depleted of the energetic and adventurous part of the farm population which could have braved the hazards of the agricultural life, better and more efficiently.

Effective Labour Supply The question is how to assess the effective labour supply, and how to move agricultural population (on which the effective labour supply depends) in the desired direction. The effective supply of labour, (to the agricultural sector) depends on the proportion of the total population engaged on agriculture, out of the total labour population. This in turn, depends on the trend of population in the economy under examination. We have already examined the two important theories of population and discovered the trend in the agrarian sector to be on the incline in a major part of the world. Secondly, the fact is that the effective supply of labour depends on the number of the able bodied persons participating in agricultural chores and farm work, this may refer to the age-composition of the farm population active on the farm. We have seen above that the trend is towards a depletion of able-bodied farm labour force and their drift to more remunerative urban occupations. In the third place, effective labour supply is determined by the character and nature of the farm move-

ments underlined above. We need not repeat the arguments advanced nor facts enumerated. We may only content ourselves by observing that the movements tend to ease the pressure of population on the farms (this pressure is not being reversed into just a shortage of labour, except in exceptional circumstances) and have mixed effects on efficiency and productivity of agriculture. Now the problem that remains to be attacked is that of bringing about an adjustment in the desired directions. The usual methods followed and advocated are to direct the labour force in the desired direction to provide incentives for the movement of population and labour in the direction aimed at, or to leave things to the free play of natural forces. The first method consists in examining the possibilities of transferring this labour force into the desired directions (the suitability therefor) and the achievement of regional balance or movement from one occupation to another. All this may be done under the compelling authority of the state. But this compulsory allocation of labour, practised by Democracies under exceptional and emergent circumstances like those of the War, is not favoured and seldom resorted to in normal times. It is only done under the gravest necessity. There would be either resistance to this policy or evasion of its provisions. As a result, its effectiveness would be considerably reduced in the normal times. The second method (that of providing the right type of incentives) would be most effective, considering practical possibilities. The prospects of transferring labour force from one place to another, one occupation to another and from one activity to another, are examined in detail. Labour's response to higher wages is also studied. The impact of increased amenities offered to labourers, if they take up employment in the desired industry, say agriculture, or follow a certain enterprise (say food-growing) is also estimated and greater amenities in rural areas provided. Special rewards may also be offered to responsive labour and the desired shifts in labour supply achieved. The last bait is that of promising better prestige, better conditions for old age and retirement and better provision for dependants and survivors. The last method of leaving things to themselves is obviously a blind adherence to the discarded philosophy of *laissez faire*, and could not be sensibly advocated.

The Farm Labour Market. Now we are in a position to understand the working of the farm labour market. At the outset, we must admit that it is very poorly organised. Because of the usual surplus of farm labour, there are always possibilities of farmers getting labour without much difficulty. What may apparently look like a scarcity may not be so in fact, for if men and the jobs were brought together, there would hardly be any shortage. In the rural sector, there is a paucity of

labour exchanges. It was only during the War that the attention of the State was drawn to this problem due to the shortage of an adequate manpower for agricultural purposes, and measures taken to ease the situation. Earlier, the farmers, anticipating the rush period, used to send out calls for labour to the contractors or other such agents who supplied them with the required quota in time. What should be done is to obtain information in advance about labour requirements and then to tap sources from which this labour could be recruited, and then to recruit the same and despatch the same to the areas in utter need of it. Labour officers may as well be appointed to deal with the situation or the employment and labour exchanges may be opened to meet with this problem. But experience in the West shows that employers have not co-operated with Employment Exchanges, they have managed to secure labour for themselves. Good employers did not have any difficulty, for migrant and casual labour reported at the right time for duty. In the U S A, *Agricultural Extension Services* have been charged with the responsibility for ensuring that farmers in each country got all the labour they needed, and were even authorised to impose restrictions on the recruiting of labour in other countries. It may be pointed out that the collection and compilation of data about agricultural labour on a national scale would be of little use, for the labour requirements in the agricultural sector are highly local and the rural labour is tied to their homes and hearths hence the supply and demand adjustments should be mainly local and not of a wider import to cover national demand.

Labour Requirements We have, in an earlier paragraph, thrashed the problems of labour requirements on the farms and here we only propose to discuss problems on a different plane. The problem is studied from the demand angle. It may be pointed out at the outset that the demand of labour on the farm is not something absolute, it is quite flexible, for the farmer could make use of more or less labour depending on the cost of labour that he may be called upon to pay. He can so operate his farm as to consume more labour, also in such a manner as to economise labour. The selection of policy and practice depends on what course of action would pay him the best. The demand of labour depends on wage levels in the agricultural and the farming enterprises. Another way of engaging labour is to prefer the system of tenant farming or share-cropping on some suitable terms. This practice has grown due to the higher wages that may have to be paid to the labourers, who, in turn, may not be so devoted as the one who has a stake in farming. And another factor that must be re-

cognised is that of custom and sentiment that is prominently important in all agricultural dealings. Wages in farming enterprises are determined by the prevalence of custom, though indirectly. Sentiment influences the supply of labour to the different farm enterprises; sentiment determines the difficulty or the ease with which it is possible to secure additional labour for farm enterprises. The real problem is that of finding the right man for the given enterprise. Unskilled labour may be available in plenty, but the skilled labour of the right type is not an easy job. Another difficulty that faces the farmer is that of knowing where to look for the type of labour that he does want; the same difficulty faces the labourers, too. Lack of knowledge on the part of labourers and employers is an insurmountable handicap for both of them. The problem, therefore, becomes rather complex. Another retarding factor is the cost of the migration to the place of work, from the employer's point of view, the cost is not incurred, for he is not sure about the quality of the men that he would get. And then the farm hands are rather stay-at-home people and do not want to undertake unnecessary journeys which may not bring expected results. It is not easy to assess in advance the labour requirements of the region other than one's own; hence the handicap to even enterprising labourers. In this matter, the labour bureaus could determine location, quality and demand in respect of the labour which has to be recruited from another place. It would also result in better fitting of men to respective jobs and consequently, in greater productivity, better wages and higher returns.

Demand for Labour. The demand for farm labour is determined by the nature of farm work. In this connection, we must understand that the demand for farm labour is of various types and arises out of several jobs that are to be undertaken on the farm. The main problem, that has been recurrently talked of in connection with the labour economy of the farm, is that of the fitting of the right man to the right job. But in this connection, attention must be drawn to the fact that agriculture is very much unlike industry, it has few repetitive tasks, though on specialised farms there may be more repetition than on other farms. Still a good deal of adaptation is called for from the the labour force. The demand for skilled labour is not of the same type as in the industrial sector; but it must be conceded that the demand for labour is not that of an unskilled type, for a labourer who is completely unaware of agricultural operations would be a discredit to farm work. Workers have to perform a variety of tasks; this means that the demand is for a labourer who could adapt himself well and who is not highly

skilled. The demand for labour in agricultural farms is thus of a peculiar type. Then we have seen that in farm work, jobs could hardly be split up into fractional ones, there is little division of labour on the farm, this implies that whole tasks have to be performed by labourers. Much mechanisation does not proceed on farms and enterprises undertaken, therefore, the worker has to be physically fit in order to be able to perform arduous tasks. On large scale farms, however, a large assortment of tools and implements is usually used and the labourer must be able to use these. But the compensating factor is that farm work does not demand that high speed that factory work does. Even the slow workers could put in some good work on a farm without any loss to the productivity of the enterprise. Then we must also notice the prevalence of the small scale of enterprise on the farm, which fact, in turn, makes the demand for labour rather elastic, for in the event of a labour shortage the farmer might as well dispense with hired labour and employ more and more of his own and his family's labour. This is conceivable. The demand for power is not very inelastic, this means that the investment of capital per unit of labour is not very high nor need it be high. All these factors suggest that the demand for labour in operations of agriculture is not very rigid, nor even very inelastic. Labourers may not be very skilled, though they should be proficient in doing a number of jobs and versatile in adapting themselves to as many tasks as possible. Then again this demand is seasonal, this point was discussed in an earlier paragraph 'problems of labour requirements', we need not repeat here the same argument. And then it need also be clearly understood that agricultural operation could absorb nearly all types of able bodied labourers who can stand outdoor work.

Impact of Technique Next we focus attention on the impact of improving technique on labour economy. In the first instance labour saving devices are the most potent factor in efficiency and productivity of labour. Mechanisation of agriculture has proceeded rapidly in the sphere of agriculture, and has been responsible for the improvement of agricultural productivity. The steam engine has been introduced, and the cattle have been substituted by the power driven mechanical appliances and machines in the field of haulage and transport. And recently the introduction of petrol engines and electricity in farming enterprises has been rather significant from the economic angle. But mechanisation, in farm enterprises, is not a little different from its counterpart in the factory. On the farm, machines have to be brought to the place of the work, for the land could not be transported to machine. Hence farm mechanisation has not resulted in any considerable and marked degree of division

of labour, machines have only increased farm productivity or reduced the arduousness of heavy jobs which used to be undertaken by human beings on the farm. It has only ensured speed and eliminated drudgery of farm work. Indirectly, however, machines have released labour, which used to be reserved for looking after cattle and fodder-growing. But it would be idle to speculate that mechanical appliances have become popular, for the size of the farm and the resources of the family-farmer have also imposed restrictions on the farmer intending to mechanise his enterprise. But where installed the family workers have been endeavouring to employ machines that could dispense with more labour; this way too, the mechanisation of the farms has displaced labour to some extent. Mechanisation is also to be set with the improvements in the productivity of farm enterprises, for if these enterprises remain at a low level of productivity, the mechanical appliances would be relatively more costly and may not be economical to use. Therefore, the improvements of the rate of growth of crops and cattle have an important bearing on the utilisation of the machines. One thing has been certain that with the assistance of mechanical appliances, the productivity of the farm labour has increased.

The Labour Market. In this connection we might bring about the more important characteristics of the farm labour market. It may be pointed out that the farm labour market is an imperfect one, farm labourers are not well organised nor even their employers. And the demand for labour is not stable; it is fluctuating and seasonal. Then the demand for farm labour, in the light of the above analysis, is rather elastic and responsive to the wage rates. Absolutely speaking, the demand for labour is not very significant, for the farming enterprise is mainly a family enterprise, often run for the purposes of subsistence, hence the endeavour of the farmer is to economise in his wage bill as much as possible. Labour supply is drawn from ordinary farm population which tends to outstrip land supplies. There is not an organised labour market from which to draw labourers for farming needs; we could only depend on the resources and the reputation of the farmer as employer. For if his reputation as an employer is high, the labourer would certainly prefer this farmer, but otherwise not. In short, we could say that the problems of supply and demand of labour are not very clear in respect of farming as an industry; they are more or less rather confused and of a highly local character; it would not be wise to generalise on the basis of an isolated experience gained in one country or one particular region. And then regional differences in regard to supply and demand for labour tend to persist, for rural labour is rather sticky in its

surroundings and not willing to move to other places. The agricultural labour market, imperfect as it is, is highly local and not at all national.

Labour Problems Before we close this chapter, we should have a preliminary survey of the labour problems that face the agriculturists and the planners. The treatment here is intended to be selective for the simple reason that the analysis of the problems could only proceed in the light of the above. The most important problems that face the labourers are those of unemployment and wages and these we propose to discuss in a separate chapter for they are also important from the point of view of general economy. And then these problems have an importance from the labourers' view point and not from the employers' point of view. In this chapter, labour has been taken as an agent of production and in this context, we have to view the problems from that angle only. In this brief survey, we propose to study the problems of children and women, who are freely engaged in farm work. Incidentally we shall also address ourselves to the issue of labour relations, though we are conscious of the fact that the relations of labourers and employers in field activities are often happy and seldom strained. In fact this problem is a broader aspect of the wider issue of general agricultural relations and it is proposed to devote space to the discussion of agricultural relations, for the subject is being recognised as of a vital importance to the rural economy. Labour attitudes would also be unravelled for the labourers' attitude to life and work is of great importance to the problem of productivity of labour. And then we also notice the major issues in regard to housing and wages, for these issues deserve to be discussed here in order to let us have a complete view of the working of the human agent of production. Among other problems that we propose to survey in brief, would be one relating to training and education of labour in order to raise its potential productivity.

Children & Women The contribution of women and children to the labour force of farm is not mean as 'family labour' is inclusive of women and children. And then the agricultural tasks are of such a nature that women and children would be employed without any danger to their health, and well being. In regard to the employment of women, it may be pointed out that the farmers get married simply because they are in need of a constant helper on the farm, it means that the labour of women is quite essential to the success of the farm enterprises. Women are not paid wages, for they are the members of the family and their interest centres round the success of the menfolk's enterprise. Still if they have to be paid, the wages

are mostly determined by custom and tradition prevailing locally. The outdoor nature of farm odds is not injurious to the weaker sex. It has been found that when the conditions of weather become unbearable for them, the work is taken out of their hand nor are they entrusted with heavier jobs either. Regulation of this work is also well-nigh difficult, for the enforcement of rules is difficult. It may be said that the employment of labour on the farm in our humble opinion is not hazardous or injurious to them or their well-being. Same could be said of the employment of children in agricultural jobs, for child labour is only used for the purposes of such odd jobs as picking and packing, etc., and these jobs are neither hazardous nor dangerous. A large part of child labour is native to the farm, and is not imported from outside at all. It is not whole-time labour, usually, it is spare-time labour, except in certain cases. But the danger is that the child may continue to be employed without caring for his schooling if such a situation persists, the next generation may also deteriorate.

Labour Relations. It is not proposed to unravel labour relations and their different aspects in so far as agricultural labour goes. The object of this brief paragraph is to bring out the impact of labour relations on farm productivity. It may be pointed out at the outset that these relations are very pertinent to the maintenance of good productivity, for in the event of bad relations, productivity may suffer. Bearing in mind the outdoor nature of the farm work, we concede that the task of supervision of the labour force is rather hazardous; it is, therefore, important that the labour relations be on an even keel, otherwise, the discontented labour may waste away their time. Again, labour is employed for rush and peak seasons, this means that the labourers have to work intensively and finish the task within the time-limit, or nature would upset the time-table. Any slackness on their part would mean injury to the job in hand; or this account, too, the maintenance of good labour relations is essential to the success of farming enterprise. Farm jobs being of a continuous nature, any work left half-done or unfinished would have to be completed by the same labourer, who knows where he left it off; this also emphasises the importance of good labour relations on the farm. A point pertinent to the above discussion is that the reputation of a farm entrepreneur is potent in attracting labourers to that farm, and this reputation is a function of good labour relations that he has been able to sustain on his farm. From this point, too, maintenance of good labour relations is most important to the success of his enterprise.

Labour Attitudes. Mention may also be made of labour

attitudes, which count for much in all production, more so in the agricultural production, where the place and routine of work are shared by employer and employee alike. The production index could rise only if there is complete collaboration between the employer and labourer. And for the reasons outlined in the above paragraph, labour relations must be above suspicion. This also implies a good attitude on the part of labourer, for without this progressive attitude production would fall. In actual practice, the attitudes of labour are not very progressive. The farm labourer is an ignorant type of person, and not one who may be considered, by any stretch of imagination, as progressive. He is usually an illiterate fellow and one who could hardly be taken to be imbued with a progressive bent of mind. In backward communities, he wears a very fatalistic attitude to life and that is why he accepts the conditions of life as they come. But in progressive environments, the attitudes may undergo a change and the backward labourer may be uplifted. Therein lies the efficiency of the employer, that he enthuses the labourer with integrity of character and the labourer is consequently persuaded to put in his very best in the productive process. Labourers usually want a secure job and a congenial environment, and given these they would respond in a very good manner and even the tempered lot would change their attitudes or at least reform themselves. Admitting that agricultural chores are of an erratic nature and the jobs rather insecure, and only seasonal, we have to appreciate the fact that the task of a well-meaning employer in reforming the attitudes of his labour force is rather very difficult. It may be pointed out that the cultivation of the good personal qualities would amply repay the farmer, as also the labourer, towards the cultivation of good relations.

Housing & Wages In a preceding paragraph, we have had occasion to talk about the wage policy for farm labour. It would be not out of place to remind the reader that reference was also made to the housing facilities which may attract agricultural labourers to a certain locality and a certain farmer, for surely the housing needs of the labourers are of a great significance to the labourers. In regard to wages, it may only be said that the attitude of State authorities, though helpful and sympathetic, may at the same time not be very helpful, for the implementation of this legislation is rather a difficult task for the administrator. Even where minimum wages have been regulated, the rates have more or less been on paper, as the implementation of the same has been quite hazardous. Agricultural wages, also, have differed from place to place and this has also been one of the difficulties in the way of wage regulation.

Wage Boards have been set up in other places, but again the problem has only partially been solved. It is not the place to discuss wage policies of State and to make suggestions, but suffice it to observe that the standardisation of the wage rates in the agricultural and rural sector is difficult. We shall discuss the problem threadbare in a next chapter, but it may be said in parenthesis here that wages would in the long run have an important bearing on the issues of labour co-operation and hence of farm production. From the employer's point, the rate of wages should not be above marginal productivity of the labour, and the wage bill such as may be covered by the farm leaving him a fair margin of profit.

Other Problems. Connected with the above problems, is that of the employment of labour. In the event of widespread unemployment in the rural sector, the danger is that the farmer may be living in dangerous and unsafe environments, for the persistence of unemployment would bring about an increase in the crime rate in the community. And unemployment may also bring about a lowering of the income of the farmer, for the unemployed labourer would hardly buy anything but what is most necessary for him; this means a shrinkage of the purchasing power in the community. Underemployment also is not the correct thing, for that may mean that the farmer is not very busy, or that the labour force is not being kept busy as it be. In rural areas, underemployment is the usual thing, for the off season lingers long with some employers and farmers. On the other hand, there is also overemployment, which brings about a shrinkage in the numbers of the employed labourers. Family labour is overemployed and thus the scope of other labourers getting employment is lessened. And with unstable conditions of agriculture, it is rather difficult to keep the balance of employment even. Education and other plans for training labour (and farmer also) are other important points of the same category. All the above problems, and a host of others, would be discussed in a separate place. It may be pointed out here that the solution of all these is relevant from the point of view of the producer and the farmer, as also the community.

Summary. In summing up, we may only observe that the role of the human agent of production has been brought out in this chapter. Starting with a discussion of labour functions on the farm, we discovered that the role of the farm entrepreneur is multiple, he being the labourer, investor and the entrepreneur. Other important problems of labour use were also analysed, among them those of division of labour, and work simplification may be specially mentioned as being of great importance. The problem of labour efficiency was also discussed

in great detail, for the efficiency and productivity of labour on the farm are matters of immediate concern to the farmer as well as the planner. Labour requirements in various systems of farming were assessed in rather detail, and the section rounded off with a discussion of issues arising out of labour requirements. The question of labour supply was the next to engage our attention, in this section, we analysed the structural composition of the agricultural population in its bearing on the issue of labour supply. An outline survey of the theories of Malthus and Dr Dalton was attempted, while the movements of farm population were also underlined in respect of effective labour supply, which was the main issue that has to be faced by the planner and the administrator. The study of the farm labour market was the next topic. We unravelled various issues of the labour demand for farming, the impact of technique on the demand for labour was also unravelled. A few selective problems of labour were also chosen for study in the next section. A preliminary and introductory survey of the problems of child and women labour, labour relations and attitudes and housing problem and wage policy and miscellaneous other problems (e.g. employment and training and education) were the problems surveyed.

Conclusion In conclusion, it may be said that the human factor in agriculture is the most important one from the point of view of the economy and its productivity. Though some labour problems have been raised and touched in this part of the book still a complete treatment of the same has to be postponed to a later stage. It may, however, be pointed out here that the nature and the character of agricultural labour problems is entirely different from that in the realm of industry. That is why the problem has to be approached afresh. During the rush season, the demand for labour is exceptionally high while in the slack season, it shrinks off. This may be regarded as a pointer for the planner, who should so integrate his agricultural activities, that the slack season in one agricultural enterprise may fit in with the peak season in another. It may only bear a closer scrutiny to investigate into the conditions of demand for labour in various localities. The extent of the division of labour in agricultural tasks, is very meagre and that limits the employment of specialists and machinery too. The problems of labour requirements as they reveal themselves in the agricultural sector, are of a particularly distinctive character, for the labour requirement is either seasonal or only supplementary. Backward as the agrarian communities are, we discovered that the law of Malthus applied here, with the result that the question of a labour shortage does not usually arise in agricultural communities. The movements of the farm popula-

tion, we suggested, could be directed by a wise and discriminate administration, so as to bring about an equilibrium in agricultural labour situation. The farm labour market, it was maintained, is not a perfect market but mainly local: hence the labour problem also assumes a different complexion in the rural sphere. But we may be only anticipating some of the arguments that we proposed to study elsewhere.

The Human Basis. In this chapter, a detailed study was made of the human basis of the agricultural enterprises. It was emphasised, time and again, that the most important single agent of production in all production, is man, even though land is quantitatively the most basic of all the agents of production. Land is a passive agent of production, though the most employed and exploited one, too. But Man is the most vocal agent and one who is the most difficult to deal with. It is because of the distinctive traits that characterise the human factor, that its study is of the utmost consequence to the smooth conduct of agriculture and the success of farming enterprises. By the introduction of the latest in the scientific technique, the problem of the utilisation of this agent has become a more complex problem. With an increasing appreciation of the problems of agricultural labour, the scope of welfare activities in this sector is increasing, too. It may be recognised here, that the human basis of farming must be strengthened if the aim of better and more stable agriculture is to be realised. What is yet lacking is a correct assessment of the human agents (and the aspects of the same in the agricultural sector) from the point of view of the community: that may impose some restrictions on the free play of labour activity and also be coincidental with the regulation of labour engaged on farming enterprises, but the sole aim of this analysis is to achieve collective welfare, even though at some cost.

CHAPTER XVIII

LABOUR IN AGRICULTURE

Recapitulation—Labour in Agriculture and Industry Agricultural Labour Labour in Rural Economy Distribution of the Labour Force Rural Work Nature of Rural Work Rural Living Social Aspects Human Satisfaction Economic Disparities Community Setting Scientific Labour Management The Objective Rationalising Rural Labour Labour Requirements Machinery and Agriculture Income Data Work Simplification—The Objectives Parity with Industry Procedure Labour Consumption Classification and Results Impact of Mechanisation Work Simplification and Labour Distribution Displacement of Labour Mechanisation Agriculture and Unemployment Impact on Income Economic Progress Displacement and Resettlement Urbanisation Effects—Parity in Mature Economy Transition and Technology Catastrophe and Restoration Embryonic Developments The Inference Labour in Agriculture The Picture Dynamic Effects Labour Perspectives The Theory of Reorganisation The Social Side Labour Welfare Summary and Conclusions—Labour in Rural Areas The New Horizons.

In the last chapter, we made an introductory study of the Human Basis of Agriculture and discovered that this is important. Human contribution to agricultural chores is immense and significant from the social and the economic standpoint. Though we had occasion to refer to agricultural labour and its place in the agricultural systems now and then, still the space was too insufficient to bring out the correct contribution of the same to agricultural production. In this chapter, therefore, we propose to discuss the various aspects of agricultural and rural labour and assess their place in national agriculture. We propose to discuss, in the first instance, the nature of work in the rural areas and life connected therewith, next we describe the satisfactions of the same. The economic disparities, arising therefrom, would be studied in the communal setting. The application of the principles of scientific labour management to the sphere of agricultural labour would be then examined. rationalisation of labour management and the labour requirements arising therefrom and the study of the income data are proposed to be listed. Work simplification, in its impact on agricultural labour, the labour income and farm mechanisation would also invite our attention in another section. The displacement of agricultural labour with reference to mechanisation, is the next topic to which we shall address ourselves. The effects of urbanisation on rural labour and living, in the mature economies, the transitional and the restoration ones would be studied. The chapter would be rounded off with an overall study of the place labour occupies in agri-

cultural enterprises. A significant study would be made of the theory of reorganisation in the sphere of the rural economy. The social and the human aspects are intermingled in this chapter, for the simple reason that the two are very much mixed up in rural living, too.

Recapitulation. Before launching out on an analytical study of labour issues in agriculture, we need to recapitulate the conclusions arrived at in the last chapter as these have a bearing on this analysis. The importance of the labour force in the field of agriculture could hardly be overestimated, for the whole fabric of agriculture is woven round rural labour in that the system of agriculture could not be made to yield desired results if the labour were absent from the agricultural sector. In another respect, too, the work and contribution of labour to increased productivity in the agricultural sector, is not inconsiderable. Labour has a place in agriculture different from what it occupies in the sphere of industry, this thing has been well brought out in the last chapter. A comparative study would be made here. The distribution of the labour force both in industry and agriculture and other tertiary occupations is also significant from the agricultural point of view, for a greater absorption of the labour force in other non-agricultural callings leaves a smaller allotment for agriculture, which in turn may require labour to be economised in this sector with the consequence of mechanisation being introduced. If, however, the demand for labour from other "industries" is low, the excess labour supply would most likely create a glut in farming with greater pressure of population. All these and other allied subjects are studied in this section.

Labour in Agriculture and Industry. It is pertinent to assess the place that labour occupies in agriculture and in industry. While in the industrial sector, the labour force has to work within the four walls of the factory; in the agricultural sector, labour has to stand the hazards of (inclement) weather. This means that manpower is to be specially sturdy and able to brave the weather. The tasks in industry are well regulated and the hours of labour usually fixed, but in agriculture, the labour force has to work not only in utter disregard to hours of work, but also in accordance with the time-table set by nature. That creates difficulties for the planner in regard to planning for labour in the sphere of agriculture. Again, while factory labour may be unskilled and standardised, agricultural labour must be somewhat conversant with the daily routine of farming chores, otherwise they would be unable to cope with the work in hand. Division of labour assumes special forms on the farm and the factory, for increased mechanisation takes place on the

industrial plane, but the same identical types of mechanisation could not be extended to agriculture and farming. This also means a lot of difference in the labour demand for agriculture and industry. In another respect, too, farm labour has special characteristics of its own, for management principles, as we shall readily notice, have different application in the twin fields of agriculture and industry. Labour management in agriculture is not a little different from that in the field of industry. On the farms there is predominance of family labour but not so in other economic activities. This is by itself significant of the approach made by the agriculturist and the expert to farm labour problems. Work simplification, we saw in the last chapter, is done on different lines in agriculture, for possibilities of the same are not parallel to those in the industrial sphere. Agricultural labour has problems of its own.

Agricultural Labour Coming closer to these problems we have to remind ourselves of the fact that the rural labour, both in the agricultural and the non agricultural sectors is not a little distinct in character from the other types of labour that operate elsewhere. Talking first of agricultural labour we discover a few facts of relevance in this regard. Agricultural labour, in most countries and economies, is of the lowest strata of society and is often maltreated. It is true that with growing consciousness among agricultural labour, the treatment is getting better and better. In agriculture, there is a diversity of the labour force in the sense that it comprises women, children and adults. In other sectors, the employment of children is much restricted and regulated, while in the agrarian sector this is not possible at all. One thing that is common to all forms of agrarian labour is that they are all capable of as many odds as possible. The wages paid to agrarian labour, are mostly determined by custom and not competition, as in industry. It is an integrated labour force that works in the sphere of agriculture, for labour employed is mostly family labour. Tasks are mostly complete ones. Farm labour is also seasonal in its employment and not permanent, except in very large scale and big farms. But agricultural labour is a stable force, in the sense that they are mostly stay at home and not migratory. Also the problems, facing labour in agriculture and farming, are of a distinctive character. Most agricultural jobs are manual, consequently, the labour force is performing mostly physical and not mental work. Mental and organisational work is somewhat physical in its nature. Similarly, physical work also means some amount of mental exertion. Hence it should not be concluded that agricultural labour is all physical and not mental. Still, it must be said, that farm labour is predominantly physical.

and not mental nor organisational, except for the owner and the proprietor of the farms.

Labour in Rural Economy. Regarding other forms of labour in the rural sector, we have to point to the main differences between the agricultural and non-agricultural labour. Non-agricultural labour (although the distinction is not so clear and sharp) could be differentiated at least in the functional aspect. These in callings rural areas are in rural industries and crafts. Much labour force is required in cottage industries. And the various crafts and callings which tend to make the village self-sufficient also absorb a lot of labour. True that with the rise of machine industries the scope of domestic crafts has undergone a serious contraction. But that is beside the point for the present argument. Suffice it to point out here that the fields of labour absorption have remained totally unaffected, mainly because of the growing ruralisation of large-scale industries; this has created a demand for labour in the rural areas. But in the interim period, the demand had undoubtedly shrunk, mainly because of the contraction of the scope of the village crafts and cottage industries. The non-agricultural sector also covers several menial jobs, usually undertaken in villages, especially in the backward economies. It may, however, be stressed that in the rush season, the whole labour force may be enlisted for various harvesting odds. In this respect, there is little difference between ordinary agricultural labour and the non-farm labour, for the latter also work for agricultural job. The non-labour is, however, then paid wages either for jobs they undertake or for the season; often they are paid customary wages. These are matters of detail and would be analytically undertaken when the subject of agricultural earnings is taken up for study. The distinction between the agricultural and the non-agricultural sectors is only a functional one, for in rural life, both these are intimately intertwined. The point that needs to be understood is that the labour is a homogeneous group in rural areas.

Distribution of Labour. The distribution of the labour force is to be viewed from two angles, in the first instance, from the standpoint of the economy as a whole, and, secondly, from the standpoint of the distribution of rural labour. In the first point, we have to state that a large part of the world population is engaged in agricultural pursuits: this we appreciated in earlier chapters, where was assessed the place of agriculture in the world economy. Even, from the narrow national point of view, the distribution of labour in the various sectors of an economy does not influence labour available to the agricultural sector; in case the major portion of the labour force and manpower is devoted to tasks which are non-agricultural, fewer labourers, are left for work in the agricultural sector; and this means that the rural industries (agriculture

being the most important) may actually be in want of labour. On further analysis, we find that this brings about an earlier and speedier mechanisation of the agricultural chores. But if on the other hand, other industries and occupations are underdeveloped the greater pressure of population is on farms and this through the subdivision and fragmentation of holdings, may result in uneconomic farming. It is only by a balanced distribution of labour in agriculture and industry that the needs of both may be met. That is why most of seasonal industries are being ruralised increasingly, for they could draw upon surplus agricultural labour in the off season. Again, it is also possible to bring about better distribution by means of developing industry only to the extent that the agricultural sector does not suffer. In this adjustment, we have also to consider the pace of mechanisation in agriculture for if it is being rapidly mechanised, the problem does not, prospectively speaking, remain a tough one, as the prospective demands of labour from the agrarian sector would shrink. If, however, the character of agriculture remains persistently labour intensive, demands for labour would not shrink and with the expansion of agricultural activities, they would even expand. In regard to the distribution of labour as between the non-agricultural and the agricultural work in the rural sector, let it be pointed out at once that the demarcation in these two sectors of the rural economy is indistinct and confused. Hence, it may be that non-agricultural labour may be drawn upon by the agriculturists in the rush season. Still it would be instructive to note the nature and role of rural labour in the rural economy, for if the economy is well integrated, labour distribution need not be very effective in the determination of economic types. But if the two are well defined, the problem hinges on the distribution between the twin types of rural work.

Rural Work Before analysing the problems in the various aspects we must examine the nature and character of rural work. We may draw a distinction between the agricultural and the rural work, some agriculturists live in the open country, i.e. in scattered hamlets, while some of rural communities may not undertake agricultural and farming work. We speak of rural work and by this term embrace both agricultural and non-agricultural work. In this section, we seek to discuss the nature of the rural work, to which the next paragraph would be devoted. Next we make a survey of the essentials of rural living, the type of living thereof and the satisfactions derived therefrom. The social aspects are noticed in the course of this discussion which inevitably involve us in an analysis of social aspects. Attention needs to be drawn to economic disparities which arise out of

rural work undertaken in the performance of agricultural chores. But the setting of the community is also to be taken into account as a discussion of the labour and the work that it undertakes could not be divorced from the social and the community setting in which it is performed.

Nature of Work. Analysing further, we find that the rewards for rural work are deplorably low. In most rural communities, there is rampant under-employment in agriculture; examples may be cited from the East, especially India. Rural workers are, often, drawn from either apprentices or learners, being recruited of their own free choice; or novices returning from other professions or occupations with only an adolescent experience of agriculture and subsequently of other avocations; or adults from other occupations they could not fit in the other works; or other recruits coming into the field of agriculture for reasons of "fancy", or casual labour of several types; and the hereditary farmers. With expanding occupational and social opportunities, the conditions of inheritance or occupation may not tend to bring a high level of satisfaction and productivity. Occupations need not be inheritable, except in those places where their canvas is not large enough. Still, it could hardly be said that the trend towards agriculture is un-restricted and un-hindered. Not that rural work is of a monotonous nature, still it is not highly "creative", as the tasks that await the labourer's attention are rather dull and monotonous. To what extent does rural work provide an opportunity for the development of the personality and the expression of individuality is a question to which we shall address ourselves below. Still a favourable environment and a suitable type of work in co-ordination with personal tastes are factors that may enthuse the labourer for a better performance of rural chores entrusted to him. Rural work, as hinted to in earlier parts of this dissertation, is a composite job. Many are its aspects. It includes the work of the forest-grower, the herdsman, the dairy farmer, the cattle breeder, the cultivator and the cottage worker. Rural canvas is fairly large and the range of opportunity sufficiently extensive for the rural masses to cover. But the rub is that the same person and the same labourer may be an all-in-one operator for different jobs and it is in this light that we have to weigh the various aspects of rural living. This aspect we discern in the following sections and paragraphs.

Rural Living. Life in rural areas has been over-glorified in the past, though this has been overdone. But there is an element of confusion and contradiction in this "goodness" of the value of rural living. The level of rural living depends on several factors. In the first instance the resources of the individual members as also their aims and desires determine, to a

very great extent, the level of rural living. If the resources of the villagers are meagre, the level of living would tend to be very low, while if their desires and aims are not progressive rural living is tinged with superstition and conservatism with its consequent reflection on living standards. Secondly the general social and political environment and the degree of harmony with the needs and desires of village groups also influence the peasants to an inestimable extent, for it could be understood that if the social and the political environment is out of accord with the desires and the aims of villagers the confusion of thought and living persists. This factor is often forgotten when making attempts at rural construction, for if the above hypothesis is correct the mode of reconstructing village life should be such as to equate it with their *needs and desires* for any such movement is bound to fail if it is not able to satisfy their *needs and aims and their notions about living*. The next factor in successful living in the rural areas is the measure of economic success attained in the villages and the participation thereof by the uninhabitants. If economic success is meagre and participation therein by them is still less they could hardly be enthused by reconstruction. Stretching the argument still further, we find that a damped rural living unable to inspire and enthuse villagers would reflect itself in the lowering efficiency of labour in the rural areas. Marketing organisation and the efficiency thereof is an added factor, having an indirect bearing on the standards of rural living. If the marketing organisation is defective or unable to provide the cultivator and rural workers with the due remuneration, living levels would be undoubtedly depressed and found to be very low. And on this depends the economic resourcefulness of villagers as also their well being for marketing services are the determinants of farm incomes. The presence of harmonious social, cultural and educational services is also another contributory factor to successful living in rural areas, for in the absence of these services (the religious ones, too) village life would remain incomplete. And lastly the impact of the phenomenon of change on rural masses is of sufficient importance to a successful life which may be led in the villages. To these direct and apparent factors may be added the other ones which contribute considerably to the betterment of rural living. These factors include changes in transport and communication facilities for the village the impact of the industrial and commercial changes in the economy as a whole and the effect and influence of the technique and equipment on the system and conduct of farming. The effect that the first factor (i.e. the changes in the improving tertiary industries) is of considerable importance to the pursuit of life in rural areas, for reasons quite obvious, for in

very great extent, the level of rural living. If the resources of the villagers are meagre, the level of living would tend to be very low, while if their desires and aims are not progressive, rural living is tinged with superstition and conservatism with its consequent reflection on living standards. Secondly the general social and political environment and the degree of harmony with the needs and desires of village groups also influence the peasants to an inestimable extent, for it could be understood that if the social and the political environment is out of accord with the desires and the aims of villagers the confusion of thought and living persists. This factor is often forgotten when making attempts at rural reconstruction, for if the above hypothesis is correct the mode of reconstructing village life should be such as to equate it with their needs and desires, for any such movement is bound to fail if it is not able to satisfy their needs and aims and their notions about living. The next factor in successful living in the rural areas is the measure of economic success attained in the villages and the participation thereof by the inhabitants. If economic success is meagre, and participation therein by them is still less, they could hardly be enthused by reconstruction. Stretching the argument still further, we find that a depressed rural living unable to inspire and enthuse villagers would reflect itself in the lowering efficiency of labour in the rural areas. Marketing organisation and the efficiency thereof is an added factor, having an indirect bearing on the standards of rural living. If the marketing organisation is defective or unable to provide the cultivator and rural workers with the due remuneration, living levels would be undoubtedly depressed and found to be very low. And on this depends the economic resourcefulness of villagers as also their well being, for marketing services are the determinants of farm incomes. The presence of harmonious social, cultural and educational services is also another contributory factor to successful living in rural areas, for in the absence of these services (the religious ones, too) village life would remain incomplete. And lastly the impact of the phenomenon of change on rural masses is of sufficient importance to a successful life which may be led in the villages. To these direct and apparent factors may be added the other ones which contribute considerably to the betterment of rural living. These factors include changes in transport and communication facilities for the village, the impact of the industrial and commercial changes in the as a whole and the effect and influence of the technical equipment on the system and conduct of agriculture. It is, therefore, that the first factor (i.e. the changes in the primary industries) is of considerable importance of life in rural areas, for reasons quite obvious.

all countries the expansion of the means of transport and communications has led to the modernisation of village life. The second factor has already been discussed in the earlier section, while the third one also need not be analysed as we intend to bring out the impact of technique in a later section below.

Social Aspect. The social aspects must not be forgotten for ultimately all living is a social phenomenon. The composition of rural population changes with each change say from subsistence to commercial agriculture, or from the ratio of capital equipment to manual labour in agricultural production. This should be self-evident in view of the fact that these changes bring in more traders, more mechanics, more professionals, more transport workers and more of the several other categories of workers. On the social side, the town is extending the range of its influence and of its attitudes, with every modernisation of agriculture and with every expansion of agricultural activity. The indirect factors, enumerated in the last paragraph, are more of a social content and have reference to the social side of agriculture. With the extension of the ruralisation of industries and greater industrialisation of the agricultural and rural areas, and regions, the penetration of the non-agricultural, and sometimes even the non-rural populations into rural areas takes place with consequential social impact, on the village life. This has a healthy influence: it leads to the modernisation of the outlook of the villagers, for the introduction of industrial craftsman or the industrial labour into villager's life means that he also broadens his outlook. Even the setting up of industrial structures and the factories in rural areas, helps to extend the peasant's horizons and makes the poor and illiterate ones familiar with material equipment of the modern industrial civilisation. And then changes in modern technique and their increasing application to the sphere of agriculture also impresses upon the villagers' mind the benefits and merits of the present-day civilisation. The total impact of the above mentioned influences is typically known as urbanisation, for it is the penetration of urban influences into the rural arena. Two social groups, two modes of living conflict with the result that the rural way of life is slowly breaking up and giving way to the urban one. There is a mixing of populations, a mixing up of the modes of thought and a mixing up of occupational experiences. All this is significant from the point of view of village life. First comes about a change in the structure of population, and then follows, a cross-current of ideas, outlooks and airs. The two groups, the urban and the rural, conflict with one another with happy results for the pace of human progress is accelerated and the peasant's *shell* broken, and his isolation shattered. The process is one and the same in all economies, the only difference is that the pace of

urbanisation of rural groups and communities is different in different regions. In the backward and the transitional economies, the pace is slow for the simple reason that the pace of industrialisation itself is slow. Slowly and gradually, a common culture and common way of living are pervading the countryside. Segregation of rural and urban communities would be impossible even if industrialisation were not realised, still the spreading transport and communications invade countryside with results mentioned above. The urbanisation process is the one of adaptation and amalgamation of cultures and modes of living, and expressions, and these processes are also regarded as affecting rural cultures. Be that as it may, rural people take them as a release from and expansion of their outlook. This observation is very pertinent, if to rule out the impression that the urban mentality would submerge the rural and dominate over it. In fact, given the attitude towards changes as given above, the fear is rather unfounded, for the rural people are adapting themselves to this.

Human Satisfaction With this background, we should see what the sum total is in terms of human satisfaction that rural work and living does provide to a villager. The most common needs of man are *firstly*, the satisfaction of hunger, procurement of nutrition for optimum physical development and longevity *secondly*, adequate shelter and clothing, *thirdly*, family living, *lastly*, the development of the personality and the cultural values and the expression of individuality. In regard to the first, it may be pointed out that hunger, if not satisfied, would mean a devitalising of the rural community and a demoralisation of the individual. A hungry stomach knows no morals, refusing to advance and progress. Nutrition is closely allied to this need, and better nutrition means more efficient and better productivity, for if the level of nutrition is good, the capacity to work harder increases output. These should be regarded as elementary human needs. Surprising as it may look, the backward regions of the world, though mostly trying their hardest to make their subsistence farming a success, have many hungry or under-nourished peasants, who in turn, are a deadweight on the rest of the society and actually impede the progress of the society to which they attach themselves. In fact, these twin needs are to be regarded as basic to the achievement of other satisfactions in life. Adequate shelter and clothing are also to be regarded as allied basic needs. It may be pointed out, however, that rural housing and clothing are usually shabby and inadequate, it may also be contended that this deficiency has persisted through the ages without in any way impairing the efficiency and productivity of villagers. To this it may be pointed out that the truth of the above contention is not borne

out by the course of historical development, for verily, the farmer today is much more efficient than his predecessor. And then even if this be true, (admitting this for the sake of argument) the consciousness of the farmer in this regard is another factor that makes him inefficient now as never before, for he thinks that unless his basic needs are fulfilled, his life has been a failure. Hence, this is a precondition to the efficient conduct of farming activities. It is fortunately another fact, that the needs of farming communities in respect of housing and clothing are not high or ambitious; the ordinary peasant is content with a mediocre type of housing and clothing provided to him. Regarding family association and living, it may be pointed out that the same is an important point with farming communities, for without the development of family life and success attained in this respect, the farmer is unable to derive human satisfactions from his work. Farming communities are more wedded to family living than the urban ones, for the reasons outlined elsewhere. In farm work, the part played by the family is regarded as of an indispensable nature. And lastly, the realisation of cultural, spiritual and social values by a farmer is also one of the important objectives of human aspiration common to the farmer. Knowing as we do, that the religious and spiritual values are also regarded as of supreme importance by the farmer we have to concede that the above achievements add colour and zest to his life and make it more complete. It may be pointed out that the provision of goods in this matter also includes the provision of services; and this requires more leisure, which in economic terminology means freedom from gainful pursuits.

Economic Disparities. Next we discuss the implications of Economic Disparities, from the social point of view. Some theorists believe the economic rewards for agricultural and industrial activities should be equalised. In this sense they have pointed to the compensations of the agriculturists, as proffered by Nature. But it may be pointed out that what is aimed at is the equalisation of incomes as between agriculture and industry, taken from the operator's point of view. True that the segregation of rural and urban groups may be impossible for any length of time, and that the social and cultural outlooks and standards may also be of the same style or tend to become so. The barriers between the two groups would generally be broken down with the passage of time, and because of the development of communications and its consequent effects on thought, outlook and standard. And any effort to maintain these barriers would be detrimental to the growth of a progressive type of citizenship. The problem in the rural areas is that of extension of fuller benefits of the modern facilities of

the enjoyments of a common cultural inheritance and common achievements in the material advances of various civilisations. This process need not be the common one of "urbanisation" adverted to above. It would be quite a different process, for it is one of adaptation and amalgamation, too. Cross currents of thought, cross fertilizations of ideas, and cross influences of cultures, all these are important for the general build up of society which may grow to be a homogeneous one. Urban groups may be advised to attach higher values to the system of agriculture and the modes of agriculture now. Economic disparities exist not only in the matter of agricultural (and rural) incomes and industrial (and urban) incomes, but also in the modes of spending these unequal incomes. This disparity is all the greater because of the fact that the utilities described from the same angle are still more unequal. A wide gulf exists between the urban and the rural groups and their ways of living. The amenities available to the rural groups are not the same as to the urban groups. Theoretically speaking, the rewards on investment, whether in the rural or in the urban areas, should be the same and the disparities eliminated. At the present moment, there is a strong process of urbanisation which seems to dominate the rural culture and sway everything before it. The bias in the educational system is to urbanisation, and the ruralisation of the educational system is strongly indicated. Education should be directed towards the co-ordination of the agricultural and the non agricultural vocational needs of the community, integrating the two and laying the foundations of the "second culture" in national communities. Religion appears to be a distinctive trait of rural communities, and in this respect, it may be pointed out that the religious practices may as well be a regressive force in rural communities, as such efforts should be made, where necessary, to "reform" the current religious practices so as to make the same progress with a view to stimulating economic incentives in rural communities. Our observation is that religion is on the decline in the religiously inclined rural people, because it has become anomalous in the modern day living. As regards the third cause of economic disparities as in rural and urban communities, it may be pointed out that the ruralites could not provide themselves with the amenities and services common to the present age. The usual contention is that the poorer sections of the population, not used to the services and amenities, are living in the rural areas—quite an untenable argument.

Community Setting This brings us to the study of the community setting, which alone could effect parity as between the

urban and the rural communities. Rural communities should be revitalised from the financial point of view, for that alone could mean the extension of modern amenities of life to the village life. With these changes brought about in financial provisions for community services, their extension would be brought about. Rural citizens have been slow in adapting themselves to the progressive elements in modern civilisation, as the system of education did not keep pace with the march of civilisation ; the system of transport and communication failed to keep pace with the development of the economy in general. The need for better education and training for rural masses is urgently desirable. In the ultimate analysis, it is the response of the rural people themselves that could achieve their betterment, toning down barriers between rural and urban populations, and bridging of the gulf between the two. What is sought to be emphasized is that the rural communities must not be exploited by the rest, and that this exploitation could only be ended by rural communities becoming conscious of their rightful place in the community. Analysing further, we find that the trend towards the lower remuneration of labour (and incidentally, capital) in the field of agriculture is more or less persistent. This is the accident of change in economic methods, processes, and organisations. Process of change has been in acceleration in the urban sector, but has only haltingly proceeded in the rural counterpart. Postulation of the supply of labour (and capital equipment) in rural areas, permanently subject to low remunerations has resulted in the deterioration of their qualitative standards. And this is something surprising. Slave labour (or slave capital) could not be expected to persist in the employment of the society as in the rural setting, for the farmers have now become sufficiently conscious of their lowering standards of living. This has added fuel to the fire and the discontent is mounting now, with adverse results for the society. In this light, the equalisation of rewards in the urban and rural sectors could only be ensured by a change-over in the community setting in rural areas. The suggestion that economic disparities may be suffered in the interests of the multiplication of the agricultural population for carrying on farming business (so that the law of Malthus may operate with redoubled vigour) does not stand the test of modern economic living. This is also repugnant to commonsense thinking and accepted standards. Hence a start must be made from the rural setting itself, for if the rural community is not prepared to stimulate itself to further effort, it would be doomed to permanent lowering of their living standards or static earnings at a low level. Modern leadership may well argue itself out on the basis of Malthusian concepts, but it may be pointed out that quantity is not of

essence in rural setting, it is most urgent that their qualitative standards should also be raised. For this reason, too, the environmental surroundings must be elevated and the persistent environmental differences wiped out, so that rural labour may also reach that very level of good breeding as the urban labour has in respect of their education, training and the various opportunities offered by their environments. The environmental differences are, to a large extent, remediable or at least modifiable to a measurable extent.

Assessment On a careful weighing of the different points made above, we find that the modern institutions tend to maximise the efficiencies which technique creates in a completely rational economy, the impact of technology is widespread. The increase of efficiency is brought about by the spread of technical advances in the society in question. In this reasoning, the one objective is to make social and cultural environment receptive to the spread of technology. Modern communications, modern transport system and modern education should be so spread in the country side as to facilitate the adoption of technology possible. In this matter, reliance could also be placed on the popularisation of the co-operative movement in farming communities. The main headache of the planner in the rural areas has been the disposal of surplus rural population. Again, it is contended that the development of the personality of the farmer is accelerated by the collective efforts made by the farmers in collective settlements. Others think that the real problem is that of raising rural incomes at the workers' levels. The correct usage of this income, it is argued is what is likely to contribute to the peasants' welfare, more than anything else. In the advanced countries, the farmers are using more of their inflated incomes in the betterment of the system of tillage while in the backward regions the surplus income is siphoned off into channels which may not be considered desirable. Capitalization of surplus incomes, it is feared, might add to agricultural cost. Again, it is contended, that satisfactions in the realm of agriculture, are very closely and inextricably integrated and village has to be treated as one complete unit and not as a group of peasants realizing these satisfactions piecemeal. This satisfaction could not be measured, neither in terms of inflated incomes nor in a high degree of production and marketing. And then the farming business could not be considered as a "business" in the strict sense of the word, for the farmer does not take it as a profession but only as a way of living. Farming is his whole life and not a profession for him. Rural work, in the opinion of this school of thought, is not to be compensated by means of extending the horizon of his acti-

vities elsewhere. The output of farm work could be increased either by increasing the productivity per capita, or by raising the price of the same per unit of output. It may also be pointed out that farm populations could aspire for income equality (as pointed out earlier in this section) because of their increasing efficiency and secondly, because of their declining birth rate. The differential birth-rate is treated by some as one between poverty and wealth and not as between the farm and the urban population ; it is believed that with the increase of wealth in the agricultural sector, the decline in their birth-rate is but to be expected. The increase of wealth in rural areas could be brought about by means of multiplying economic opportunities there. Rural dweller's work is considered inherently better than that of the urban worker, for the simple reason that co-operative traditions persist in the countryside. Also the farm and its worker are not far off from each other either and the social groups are rather small and the attainments of social distinction, so essential for the purposes of making the work pleasant, far easier in the rural areas than in urban ones. But the fact stands that the rural people have been treated as second class people, both from the legislative and the political points of view. And equal pay for equal work, as between the rural and urban areas is what is to be desired most from all points of view. But this brings us to the theory of reorganisation, which we study in a section below.

Scientific Labour Management. In this section, we intend to discuss the various aspects of the management of labour, in the field of agriculture. Scientific management differs as in industry and in agriculture, for the two spheres are not identical in respect of management just as they are not in the spheres of operation. Scientific management has the objective of reducing the monotony of labour chores in agriculture or in industry as and where applied. It may be that labour in the sphere of agriculture is distinctive in its character and not the same as it is in industry. In this section, we study the objectives of the labour management as applied to the sphere of agriculture. The rationalisation of the rural labour would be the next to attract our attention. Labour requirements in respect of agricultural and rural needs would be studied then. The scope and application of mechanisation to agricultural odds is the next topic of study. And analyses of income data will be taken into consideration. Management of labour has already been examined from the standpoint of the scale of farming in the last chapter: this will not be repeated here. It may be added here that the scientific management of agricultural labour is a young subject. True, that it is not only job analysis but also

related to individual farming differences. All these things would be considered in this section and that would also be pertinent to the study.

The Objective Before we set out to lay down the broad principles of labour management in Agriculture, we must also point to the fact that the labourer in agriculture is not only a labourer, but also an entrepreneur. The objective in labour management or the application of the management principles here is that labour and enterprise satisfy the twin needs of the industry. The equitable distribution of various types of farm labour in respect of various tasks on the farm is another important objective to be realised. The difficulties arising out of the seasonal requirements of labour is another consideration to be reckoned with. And then the major objective is the elevation of farm labour to the status of the peasant proprietor, this may not be regarded so, strictly speaking, but broadly speaking, and from the communal point of view, this is to be taken as an objective of primary interest. The management of transient labour also presents many problems, which may have to be considered from the standpoint of the community, as the one objective of labour management is to decasualise labour. And an important aim is to improve the efficiency of labour force, it has been proved beyond a shadow of doubt that efficient labour management results in improving efficiency and productivity. Raising their living standards is also a problem for the labour manager, for successful labour management results in welfare. Lastly, the best objective of labour management in the field of agriculture, as in all other activities, is to equate wage levels to work levels. But this is a problem which we discuss in a chapter especially devoted to the problems of agricultural wage levels. Suffice it to point out here that the problem is of a distinctive character, peculiar to agriculture and farming. In short, labour management aims at the maximisation of the labour output as in the employment of agricultural tasks.

Rationalising Rural Labour How far is the rationalisation of labour possible in the field of agriculture, is a problem to which we address ourselves now. In the industrial arena, rationalisation of labour tasks is simpler, for the process of division of labour is easier in the industrial sphere. But in agriculture, the tasks have to be performed in whole and splitting up of this activity is rather difficult. We have already noted the difficulties encountered in the application of the division of labour to agricultural labour in the last chapter. Still, to some extent, the division of labour is feasible, for the problem could be rationally looked at. The only rationalisation is the suitability of jobs to men. The right man in the right place and the

Right job is the criterion of labour management in the agricultural sector. Admitting that the agricultural chores are neither very specialised nor very unskilled, we have to concede that there is room for the various types of labour in its distribution of the agricultural chores. Rural labour could be rationalised only in this manner. In an extended sense, the rationalisation of labour could be with reference to the application of machinery for the assistance and help of the labour force. Still, without a correct job analysis, the task which faces the entrepreneur or the labour manager is stupendous. The study of various operations in the agricultural enterprises is of importance to the labour manager, for without these details, it is hardly possible for him to rationalise his labour force in respect of jobs they have to do.

Labour Requirements. In this section, while attention is devoted to the management of labour, we need to detail requirements in respect of labour from that standpoint. A reference to labour requirements, and the demand for labour was made in detailed manner in last chapter, but in this paragraph the angle is entirely different, for what we propose is to stress the importance of the same from the management angle. Labour demands in farming enterprises are seasonal; and, therefore, they have to be assessed from that angle. And then the successful and scientifically-inclined manager would so fit in various labour requirements, after he has correctly assessed the same, that labour is not casually employed but is in permanent and stable employment, if only for the reason that casual and temporarily employed labour is the least interested in their work. That is the test of good and efficient labour management. And secondly, we must also concede that labour requirements have to be assessed in respect of various enterprises in the agricultural tasks. These requirements have to be forecast in respect of the demand for outside labour, in addition to labour that is available from the family or the farmer's own resources. To what extent the farm enterprise requires the help and assistance for the external labour force and at what times, is a headache of the labour manager. In large-scale farms where the demand for specialised labour force is also significant, the manager has to estimate the requirements of labour of skilled and the specialised types, in their time-table and farming needs. The exact nature of the specialised personnel must be estimated, for these "labourers" are very costly and have to be offered high wages, before they could be employed for farm work. Another point that needs to be taken into consideration is that the expert and the specialist could also be employed on a co-operative basis, jointly with other farms.

Machinery and Agriculture In this paragraph, we set out to study the impact of the introduction of machinery on the labour situation in the sphere of agriculture. The application of machinery to agricultural purposes is not the same as in the sphere of industry. From the labour point of view, we find that the nature of mechanical appliances is of a different type. The economy of labour is not of the same extent as in the industrial sector. Requirements in this matter (of labour usage) are altered, no doubt, but not to the same magnitude as in industry. The point that needs to be re-emphasised is that the labour displacing machinery is not wholly utilised in agricultural sector, for the simple reason that most farms are not so big as to mechanise agricultural operations. Peasants are not so prosperous as to afford such costly machinery. Thus the problem is not a little different. Farming in agriculture is mostly small-scale farming and not so large scale as to make the widespread use of high class machinery profitable. It is instructive to appreciate this difference in the two spheres of agriculture and industry.

Income Data The use of income data is also to be studied in this connection. The disparities of income, as between agricultural and non agricultural groups is more or less distinctive and outspoken. It is difficult to bring about a parity between the two. It is difficult to imagine that the present stage of agricultural development admits of comparison of incomes in the spheres of agriculture and industry except if we were to take into account the very highly mechanised large-scale farms into account. In this connection, we must also recognise the fact that real earnings alone should be compared as between agricultural and industrial sectors. That lands us into the question of the comparisons of the consumption levels and the details of the same as each section—the urban and the rural, does have. Parity could only be brought about if the principles of scientific management were applied to agriculture in the same way as applicable to industry. In the first instance, it is difficult to obtain a workable basis on which the income of the peasantry and the agricultural labour could be compared to industrial incomes. The question that baffles the investigator is what incomes to compare, should the industrial incomes in the rural areas be compared with the agricultural incomes in the same area? But the economic supposition—other things being equal—is no longer effectively taken into consideration in this respect. Industries are run on different lines, the labour force therein is completely rationalised, while in the sphere of agriculture it is not so and then the extent of mechanisation in agricultural and industrial sector is different. We may also add that the income data in this respect would not provide us with any clue.

to the extent of mechanisation in the field of agriculture, nor would it provide us with a clue to the extent to which rural labour is being scientifically managed, for agricultural earnings are not the result of the application of scientific management nor of the mechanisation; agricultural earnings are the result of the conditions of the market and the situation in regard to demand and supply. Still, it may be pointed out that calculations could be based on the income data, but only in so far as the success or otherwise of the scientific management is to be taken into consideration by the agricultural economist.

Work Simplification. Agricultural production involves intelligent management and intelligent decisions in regard to farm production. We had occasion to refer to work simplification in the last chapter. In this connection, the principles of farm management are invoked, adequate knowledge of the advancement of science of animal nutrition and breeding as also the substitution of mechanical power for human energy. Organized research in this respect is now fairly advanced and on a high plane. The acceptance and use of the latest discoveries in the production of agricultural stuff may not always be adopted by farmers, because of their ignorance about them and also because of the fact that these discoveries are not available to them, or they cannot afford them. And often is the farmer ignorant regarding the use of these discoveries and inventions. There is thus a cultural lag between developing a new productive technique and adopting it for general public use in farming. Work simplification, which is the object of these production techniques, is thus very slowly adopted in the agricultural sphere. Industrial engineers have made a special study of work simplification in their own sphere, but such a study is absent in the agricultural sector. Conclusions regarding the same are arrived at by the method of trial and error. In fact, wide variations have been apparent in labour productivity in the agricultural sphere as between different farm operators and labourers. In the first instance, there are wide variations in the capacity of different individuals and then these variations persist even when the same farm apparatus is in existence and being utilised. And these variations are to a great extent due to the methods of work followed on different farms. This brings us to the problem of the objectives of the work simplification in the realm of agriculture: what it attempts to do and realise.

The Aim. We now set out to answer the first question, as to what work simplification aims to do. It would be instructive to understand clearly the scope of work simplification.

before trying to unravel the problems connected with it. In the first place, the aim is to eliminate all unnecessary farm work. This is the preliminary step, for as long as unnecessary work is not eliminated, the farmer's attention would be unnecessarily dissipated in the performance of this unnecessary work, which is not relevant or essential for the farm jobs, it is, therefore, that work simplification would only be achieved as and when unnecessary odds are eliminated. Secondly, are indicated the easiest, most effective methods of doing the work in hand, in accord with various situations that may arise on the farm from time to time. In this connection, it may be pointed out that work sequence is also of paramount importance for as was stated in the chapter on "Farm Operations", sequence is the most essential factor in this regard—one work job to follow another and that also on the right time. Thirdly the most economical and convenient combination of tools and equipment that the farm labourer and the farm operator uses is also to be discovered for work simplification, in this respect, should also be assessed facilities required for the performance of various work jobs on the farm. Again, this would vary from farm to farm. It may be objected to that this particular study belongs to the realm of the "equipment" and not to that of the "Labour on the Farm", it may be stated that it is the labourer who uses the equipment, tools, etc., hence it would be proper to study it in this connection. In case, equipment is not readily available and is not of the correct type, work gets more complicated instead of getting simplified. Hence this objective also stands to reason and is relevant to the subject under study. Fourthly, it aims to standardize, as far as possible, the improved work methods and also establish the correct and practicable work standards in order that operators may be guided in this respect. The standardisation of the farm work, as was pointed out in an earlier section, is rather difficult, still, it is a worthy objective that may be brought into practice as far as possible. And lastly, work simplification consists in the application of improved and economical methods of work, technique and standards of accomplishment. It may be said, in parenthesis, that the same could be done by the preparation of detailed instructions on how to do certain jobs effectively and develop the principles for the improvement of work methods. This is also significant for proper and effective work simplification, for the reason that improved methods would make the work easy.

Parity with Industry In this context, we have to invite the reader's attention to peasant's objective of attaining parity with the industrial establishments. As established earlier, work simplification is a concept which we have borrowed from

industry, where it has been carried to its logical conclusions and where all efforts have been directed to the realisation of the same. Parity with industry, about which we have had occasion to refer above, is only possible if the work simplification is also adopted. In fact, comparisons with farming systems are only possible if both these and the industrial ones are at par as far as operational procedures are parallel and similar. It is in this context that we have to think of parity with industry. And it has also been recognised that income parities could only be established if work simplification, the objectives of which we have defined above, is also undertaken in the agricultural sector. It is anticipated, that work simplification would ensure reduction in farm costs, and mean a fuller utilisation of labour, whether that is hired or is from the family. It would be by means of this that the farmer could hope to fight out the law of diminishing returns in all its aspects. And it may also be recalled that it is the law of diminishing returns that is responsible for lowering the earnings. If successfully held at bay and neutralised, the farmer would have travelled a long way in securing parity with industry. Labour in industry is more productive, simply because it is aided by ample machinery and also that work in various industrial operations is very much simplified, too. For this reason, too, work simplification is to be very much recommended in agriculture and farming operations. This may be regarded as the preliminary step towards mechanisation of agricultural chores; hence, too, this study is essential in this context. Work simplification, therefore, is the first prerequisite towards attaining parity with industry. And it would be instructive to study its impact on the system of farming. But in this connection, it would be pertinent to study the research procedure of work simplification, before we could delve deeper in the analysis.

Research Procedure. Coming to the procedure of research in connection with the work simplification in agriculture, we may point out that the usual method followed by the farmer-entrepreneur is that of trial and error. The problem has been analysed by the agricultural engineer and the agricultural economists. In fact, the methods of time study and motion study as understood in the industrial parlance have been applied to agriculture. Existing methods have been appraised and their effectiveness evaluated from the angle of output. It has also been probed into with a view to discovering the more effective and productive methods of work. Work simplification has been studied with reference to the several jobs in farming operations, and the effort has been directed towards a correct description and measurement of different methods,

that may be employed. Research is also directed to the appraisal of different methods in order to hit at the most efficient one. Comparisons may be made objectively on the basis of farm input output consequential to the adoption of certain work simplification methods. Advantages of different work methods are studied comparatively several work elements which enter in to the methods of doing certain jobs are studied and then the best one followed and recommended. Opportunities are always there for the improvement of even the most efficient work methods and new methods may be developed from the synthesis of better work methods in vogue. Test checks may be made from time to time in order to find out if the methods adopted or recommended are the best ones. Also are checks made for routine work done by operators and facilities suggested both by the researchers and the operators, and later adopted, too. The conclusions of the same are then made available to farmers who may be also instructed in the adoption of the same according to the proven methods.

Labour Consumption In this connection, it may be instructive to assess labour consumption on a certain job. With reference to work simplification, the consumption of labour takes place either when labour moves from one place of work to another (particularly in ordinary farming chores, or when the materials are so moved, or when the movements of the body are necessary for the completion of work in hand). The production rate on any job is determined by work method used and the rate of work activity. The direction of work simplification is towards the easier, better work and not towards the harder, faster work for it has been proved by the studies undertaken on the industrial plane that the faster work is not conducive to work simplification, but may mean delay in work undertaken and done, thus defeating the very objectives. Work methods could also be changed regardless of operational activity on the jobs which he undertakes. For example, the workers movements may be changed, reduced or made easier. Similarly, the handling of materials could also be minimised or even mechanised. Again such arrangements could be made as to maximise output (while working in the same place) by reducing the unnecessary and superfluous movements. The position of the operator may be so altered that it is more convenient for him to work on the job in hand. It may be said in sooth that work simplification reduces labour consumption.

Classification and Results What does work simplification do? This is an important question and needs to be discussed at length. This aims at the synthesis of the various labour saving methods adopted by farmers. In the first place, the

changes are brought about in the physical and manual odds undertaken. This may include the elimination of unnecessary chores or superfluous motions. Fuller use may be made of the various types of equipment, that is at hand, also that of the operator's limbs. Incidentally, greater safety is ensured for farm workers in jobs as may be regarded hazardous for them, for if the worker is sure of his safety his attitude to the work that he undertakes is healthy and good. This may also include the assignment of new responsibilities to new operators and better integration of human and machine labour. All these things are easier said than done, for they involve several such intricate problems as may not be easy of solution. Similarly, changes in equipment used and layout planned may also be brought about by a farmer who aims at work simplification. Equipment and supplies may be re-located as to be within easy reach of operators and workers. Improved work routines may be brought about by a better layout. In the spheres of production and processing, changes may be effected so as to bring about greater accord between nature's time-table and the one followed on the farm: this is done by re-scheduling farm jobs: the timeliness of crops and operations incidental thereto may be effected by those responsible for farming operations. Modifications that may be brought about in the products to suit market requirement could not be ruled out, especially now when the advance of science and technique has enabled man to do that without insuperable difficulties. Job analysis may also be undertaken by a specialist, if the farmer is bent upon effectively simplifying work operations. But it may be pointed out that the methods used are with reference to the minimisation of physical chores and the modifications brought about in the layout and equipment on the farm, for these changes could be easily brought about by the farmer and are within his means. It has been pointed out that success has been spectacular, especially in the repetitive hand and manual jobs, for they have been replaced by the mechanical work, in the installation of the mechanical appliances. Where possible, routine jobs have been simplified by job analysis; this has been widely done on the various farms in the U.S.A. and also the U.S.S.R. particularly, and the West generally. In certain cases, new improvised equipment has been installed by the more enterprising farmers who have aimed at work simplifications. After the entire process has been studied, the small routines have been much improved upon and work simplified. Even in the fields of marketing and processing, similar methods have been applied increasingly by the adoption of processing of agricultural produce so as to make it more acceptable in the markets. In short, the classification of the work simplification methods has centred round the dynamism

of job analysis, and the results aimed at point to adequate job performance. But emphasis has not veered away from the individual and his place in farming, in fact, work simplification is meant to reduce monotony. In short, the attempt has been to sift out the best method, evaluate it, and analyse it still further with a view to improving and maximising agricultural production.

Impact of Mechanisation In this connection, it would be pertinent to study the impact of mechanisation in the field of agriculture. How far is machinery going to replace labour is a question that we discuss in the next section. In this place, it would be correct to underline the various points relevant to the discussion. Mechanisation in the field of agriculture is not a little different from that in the sphere of industry. From the simplification point, mechanisation would only be fruitful if the right man is put in charge of the machine, or confusion is still worse confounded. Agricultural chores may be divided into two types of techniques: those of the indoor types, which admit of mechanisation in the same form as in the factory, and the outdoor jobs which do not admit of the application of fixed machinery. In the former, the simplification is brought about to a very considerable extent, and machinery is much more efficient than when labour and various odds are much simplified. In regard to the latter type of mechanisation, the objective is achieved no doubt, but the problem is that of the costs of this type of machinery. And it is the effectiveness of the operation too. No doubt manual labour is cut down to the minimum, in this type of work, but it may also be pointed out that the labour employed is of a specialised type, say tractor-men and other similar operators. Mechanisation, in this respect may actually raise more problems than it sets out to solve and the objectives of work simplification actually defeated. Hence, the application and employment of machinery, for the sake of work simplification, must be made with caution, for the consequences of the same must be weighed, before going ahead with mechanisation.

Labour Distribution In this context, we must also assess labour distribution from the point of work simplification problem. Work simplification differs from scientific management of labour in that it does not limit itself to the management of one factor of labour on the farm, but so manages the farm that the output of labour is maximised and the work that labour has to put in is made much easier, too. Labour is emphasised because the returns on the farm are calculated on the basis of labour output. And then the return to the operator determines the living standards of the labourer and his family.

The other factors of production are so combined with family labour as to yield maximum (and optimum) production. It all depends on the ability of the manager to appraise the various alternatives and then to find out the best one under the circumstances. And it may be admitted that the abilities of farmers vary considerably in this respect. Generally speaking, the farmer has always been seeking better and simpler ways of doing work in an easier and more productive manner. Work simplification only provides a more scientific approach to the whole problem. It is, in other words, the way of best distributing the labour force as between different farming chores and work odds. The farmer is prepared to adopt newer techniques of work simplification only if the same promise a reduction of costs per unit of produce, or give greater output per unit of labour used and employed. Hence cost measurement is rather intimately connected with work simplification methods. Improved methods of work simplification would no doubt be good for raising agricultural production also in distributing the labour force more efficiently but it must also be recognised that the application of these more promising methods would only be taken up by the farmers if the distribution of labour is such as to raise productivity in the short run and not in the very long run.

Displacement of Labour. Having understood the implication of work simplification with respect to labour in the sphere of agriculture, we now proceed to bring out various points in connection with the displacement of labour as it comes about by increased mechanisation. In regions, where labour has been comparatively inefficient and land under-exploited, the problem has special significance. In other countries, where land has been more fully exploited by means of mechanisation, the problem poses a different set of issues. In fact, nature is not niggardly in those places where the productivity of land is low: it is that man has been unable to exploit land more fully and that is why productivity has been at a lower level. For instance, in the case of India, nature is quite bountiful, but it is man who has not been successful in getting the best out of nature. And to a large extent, it is the inapplication of the latest advances of scientific knowledge and technique to agricultural activities and operations that has been responsible for the niggardly yields out of soil. The latest in science, engineering and technique has not been applied to farming and therefore, the best out of land not reaped by an ignorant farmer. In fact, the use of large tractors and other mechanical and electrical appliances even if the same could be used, involve such heavy costs that the poor farmer is discouraged from using them. And then the non-availability of skilled labour necessary-

to utilise that specialised capital and machinery is another hurdle which the poor farmer may be unable to cross. And then the use of machinery may also be uneconomic on the small and fragmented pieces and plots of land which are under the plough. But from the planner's point of view, the most important consideration is that of *economic expediency*, that is, the impact of mechanisation on the employment of labour and *economic effects*.

Mechanisation and Unemployment Analysing further we find that mechanisation might result in some sort of unemployment in the agrarian sector of the economy. In the backward regions, particularly, the impact of this mechanisation has been in the unfortunate direction of unemployment that proceeds like a snowball. In the advanced countries, profits made out of the application of modern and scientific methods to industries have been diverted to increasing investments in the agricultural sector. In the backward countries, this process was reversed as the modernisation of industry did not proceed and hence, an increasing investment in the field of agriculture did not take place and even if it did that would add to the great unemployment that has been caused by the severe and cut throat competition from the imports of machine-made articles. Hence the fear is that mechanisation of agriculture in the backward countries, where the pressure of population on land is already very high, might result in still wider unemployment and this may be followed by very evil social consequences. Thus technical investment in agriculture and the technological improvements brought about there may be negated by the emergence of the problems of rural unemployment and then the problems of rural resettlements. Logically speaking, therefore, the problem is that of the proper sequence of mechanisation in the spheres of industry and agriculture. But theoretically speaking, the success of modern farming and its high productivity depend on the mechanisation of the methods of farming. And mechanisation is only possible if it is preceded by the formation of larger units and their integration, for otherwise the mechanised enterprises would only be too costly, and therefore, uneconomical. But the real problem would pertain to the displacement of large number of people now living on these farms, for as we pointed out earlier, the pressure of population on these farms is exceptionally high and heavy. The prospects of mechanisation are, therefore, on the face of it, very gloomy. The presence of these large numbers of landless peasants is a menace to the social fabric of the society and also a danger to the tranquillity of the countryside. It may be useful to recall the horrors with which mechanisation of agriculture

was attended in the U. S. S. R., if we are to believe the various accounts of the historians of the economic development of the Soviet Union. And we must also bear in mind the unsuccessful attempts at mechanisation in certain European and Western countries, particularly Hungary. With full employment as the one aim and goal of economic policy, it would indeed be dangerous to go ahead with mechanisation, if the above-mentioned consequences of mechanisation are inevitable. True, that full employment is not the only goal of economic policy, but it is full employment along with rising standards of living and increasing incomes of the wage earners and the society as a whole that must be aimed at. It would be from this wider angle that we view this.

Impact on Income. Coming to view the problem from the income point of view, we discover that the improvements that may be adopted in the productive arts to increase the income of the community are but to be welcomed. Possibly, "transitional" unemployment may result from this effort aimed at the raising of income, but this has to be suffered if it is of a temporary and passing nature. The advocates of mechanisation of agriculture claim that unemployment arising out of the same, is of this category and not permanent in its character. They argue that this unemployment of the agricultural labour is initial, transitional and temporary, which may be compared to the unemployment that may have arisen as a result of the introduction of the plough and other such elementary implements in agriculture. This, it is held, is the first impact of mechanisation and as such need not be very much feared. In the second stage, it is said, mechanisation would considerably lower the costs of production, and therefore, make agricultural pursuits very remunerative, too. And analysing further, it is pointed out that this reasoning would hold correct and the income of the community would be raised, too, if the demand for the products (whose costs of production are being lowered as a result of mechanisation) is elastic and ultimately larger quantities of the same are now being purchased than when their prices were high when there was no mechanisation. This argument may not hold water, if we remind ourselves that the demand for the agricultural produce is not of an elastic nature; the real elasticity of demand for agricultural products is rather low. Hence mechanisation of agricultural production may not result in the raising of the income levels in the community, at least the agricultural community. All labour-saving devices, particularly in the agricultural sector, may only displace large numbers of labourers, with the inevitable result that the absorption of these unemployed labourers may actually pose a prob-

lem of no small magnitude to the planner and the administrator, alike. In the advanced countries, or in those regions which suffer from a shortage of labour in the agricultural sector, mechanisation may prove to be a necessary aid to the improvement of production and in overcoming labour shortage, too.

Economic Progress The connection between work simplification and economic progress needs to be established now. Labour-saving devices may not be labour-saving only in the sense that they economise labour but also in the sense that they tend to increase output. Mechanisation, in other words, is the essence of the work simplification, in this sense. But mechanisation might tend to displace labour if brought about in the agricultural sphere. In the West the shortage of labour may also be a menace and, therefore, labour has to be supplemented. But in the backward economies, it may be regarded as an evil because it releases large numbers of labourers into the ranks of the unemployed. From another angle, mechanisation would bring about greater and more rapid mechanisation in industry, which might come about when agricultural requirements of labour shrink considerably. It is contended that mechanisation of agriculture brings about a more rapid increase of the application of machinery to the spheres of industry. Economic progress need not be a function of mechanisation, for even if we conceded that mechanisation is the essence of economic progress (and that need not be so at all) then too mechanisation of agriculture need not bring about more rapid mechanisation of industry. The familiar argument is that mechanisation of agriculture creates newer types of employments, to repair and maintain machinery. And it would also accelerate the incomes of various classes and that would make the introduction of the modern means of transport and communications, electricity and other such amenities of modern life to the countryside more facile. And if the process of work simplification proceeds on more rapidly, the result would be the acceleration of economic progress, even if we do not refer to progress in terms of increased mechanisation. Work simplification, without attendant mechanisation, would mean better utilisation of the labour force and pleasanter tasks. This, in turn, means that labour is more productive and that would go to improve the national dividend, and a higher national dividend is the goal of economic progress. In this way, too, work simplification would ensure economic progress, though the usual argument of work simplification leading to mechanisation, first, and then mechanisation leading to raising of national dividend in the second stage does not seem valid. On the other hand, the argument stresses that work simplification leads to high-

tened productivity of labour and that, in turn results in increase of national dividend.

Displacement & Resettlement. We come to the final phase of work simplification, that which might result in the displacement of labour with the problems of resettlement coming to the fore. In the first instance, we must recognise the fact that the work simplification need not be synonymous with the mechanisation of the agricultural chores. Work simplification only means work simplification and may not be carried to its logical conclusion; mechanisation. Still, it may be contended that it may result in *saving* some labour, which in that way gets "displaced" and need be resettled. We recognise that with the increase of work simplification, labour efficiency increases and so also productivity. An increase of productivity in the agricultural sphere would mean cheaper prices, and through the law of demand, it may mean higher employment of labour. Thus the displaced labour may be absorbed by the extension of agriculture, as also in the processing and other kindred industries, which may also be extended as a result. Again, it may be pointed out that work simplification may aim at combating the law of diminishing returns, too; and if this objective is fully realised, then the productivity of agriculture may increase and the production of the agricultural commodities heightened with cheaper prices. This, again, means an extension of the agricultural industry and the other allied industries, dependent on agriculture. This analysis leads us to the conclusion that work simplification need not mean a permanent displacement of labour, for the labour force is capable of re-absorption at a later stage. Labour resettlement is thus a feasible proposition, too. It is thus only a question of time-lag. But if over-mechanisation comes about and persists the labour resettlement might not be considered as a feasible proposition. Mechanisation should be conducted at a uniform rate over all industries. Our conclusions in this respect are, *firstly*, that work simplification might not mean mechanisation necessarily, and *secondly*, that work simplification, even if that brings about some displacement of labour would eventually also be able to re-absorb the same labour force, *provided* the economy is taken as a whole. Displaced agricultural labour might be absorbed in industries other than the agricultural.

Urbanisation Effects. In this section, we study the impact of urbanisation on the village labour force. We have had occasion to refer to various aspects of urbanisation elsewhere in this dissertation, but now a systematic analysis of the same is proposed. We discuss the problem, from the angles of various economies. Urbanisation effects in the *mature* economies would

be underlined and then the same in the transitional regions. In the mature economies, parity is the main problem and the main issue, while in the transitional structures the main problem is that of the technical advancements intended to be brought about, their pace and character. The restoration economy is marked by the problems of economic catastrophe, consequent on the urbanisation movement that may have spread to rural areas. The next paragraph would concern itself with developments in the developing economies, or the urbanisation aspects. We have to spot the nature of the problem in each particular type of economy. And we must also remember that urbanisation is with reference to low-standard rural people and their families. Low-income rural families are mostly those who have not a definite place in the social hierarchy otherwise, and who again constitute a major part of the labour force in the countryside. Comprehensively speaking, we find that the agricultural sector in the rural countryside is composed of landlords, peasants, tenants and labourers. In the non-agricultural sector, there are the craftsmen and the unskilled and low grade labourers. Thus the low-income group, whether in the agricultural sector or in the non-agricultural one, is predominantly the labouring classes. That is what interests us in studying urbanisation effects in the rural countryside, for this is limited to a study of the low-income groups. We shall see if urbanisation would bring about betterment in the living standards or not. The problems that we propose to consider are: would the urbanisation bring about a rise of the living standards and would they lead more complete lives, fuller and richer in all aspects. These points are of considerable interest for the reasons outlined above. Suffice it to repeat that the urbanisation has a different impact in each of the four different types and the behaviour of low income group in all these economies, also differs.

Parity in a Mature Economy In a mature economy the concepts of urbanisation of the low grade rural economy and the low income groups are different, for its economic structure approaches the ideal of economic development. Here is parity in the use of resources and real incomes in rural and urban types of employment. By the term "Mature Economy," we understand the state of affairs in which the real income on farms approximates to the most efficient and productive utilisation of technical advancements. In this economy, therefore, the real incomes in the urban and the rural areas are approximately equal. We could cite instances of modernised farming systems of the U S A and the U S S R where the application of the modern technique to the field of agriculture has reached its zenith. Such a balance in the adjustment of the exploitation

and the utilisation of resources, is a prerequisite to maximisation of the "social and the private net product," to borrow a phrase from the Pigovian terminology. And the inconsistency between the two is reduced to the minimum. We have few labourers who could except to find better chances in an alternative employment. They represent some maladjustments, the result of economic friction. These maladjustments are bound to arise out of the fact that the pace of various dynamic influences, though simultaneous, are yet not identical ; individual consumer tastes and high technique may not keep in pace. Changes in both may occur at irregular intervals, and then these changes may also not be consistent with each other. In the long, long term, "the secular period," there would be brought about auto-corrective shifts in the economy, but there would certainly be population and labour movements from one occupation to another for better and more remunerative work. Balance would tend to be maintained as between urban and rural segments by the dissemination of information and the acquisition of knowledge in the various labour sectors. True, that with the development of trade unionism, such shifts may also be reduced to a minimum. Still the other possibility could not be ruled out. Direct group action or governmental intervention alone would force this attainment of the rural-urban balance. The benefit that would accrue to the low-grade rural families who could not be rated high in view of the fact that the difference as between the rural and urban levels of earnings is not very high. To the extent this differential margin persists, to that extent only would the shift be suffered, and to that extent alone would these people benefit.

Transition and Technology. The next set of economic conditions that we address ourselves to are those that obtain in the transitional economies. These economies are characterised by the process of technological change, a process that is not of the same character in both urban and rural counterparts of the economy. Technological changes release a set of forces which, in turn give rise to economic adjustments, brought about in the rural and the urban incomes. Technological changes may also usher in the transitional stage which may continue for about a generation or so. Specialization grows, first by occupation, then by regions and lastly by countries. The last phase of specialisation seems to have been arrested by the stress to which self-sufficiency subjects national progress. Still, people live close to land to obtain food and housing, subsistence agriculture persists in this economy. There is still a greater emphasis on "direct appropriation" of the economy. It may be that the *social costs* of technical advances may be high. In the process,

therefore, the shifts of population from rural employment to the urban one come about, and the tendency is towards total urbanisation. Coming back to the agricultural segment, we discover that simple technological changes usually add to the productivity of each factor of production, and therefore, to the *social net product*. Technical changes increase the productivity of land and the returns to the productive apparatus, too. Still the theoretical anticipations are not so rapidly realised, for the economic and social friction damps the whole process. Often it so happens that the changes in the technical aspects are of an economy-shaking nature, they alter the basic combinations of productive factors employed in agricultural production. The efficiency and capacity of the agents of production is much altered by the process of technical application. New potentialities of production are attained and the *net social product* is thus raised too. Hence, new sets of forces are released and new levels of real incomes attained. There is thus a new discrepancy in the rural and urban incomes. Costs in urban industries would be likely to fall, because of the increased application of new technology. In these circumstances, the shift of population from the rural to the urban employments would be gainful in so far as income standards are concerned, for while urban industries are highly technical, agriculture has lower earnings still.

Catastrophe & Restoration Attention may also be drawn to the third type of economy that we set out to consider, namely, the *restoration* economy which has been shattered by a catastrophe of a national magnitude. The economy is ravaged by war or some such catastrophe and the energies of the people are directed to its restoration. All the economic resources are directed to the full utilization of this goal, the maximisation of the social net product. In this set of economic circumstances, the absorption of displaced people is possible. Since the process of restoration in the rural sector is slower indeed, there are greater chances of the absorption of labour force in rural employments than in the urban ones. Possibly urban reconstruction proceeds in the first instances, but ultimately, rural sector must command attention and the chances of the rural migration urbanward remote. This may mean that a process of deurbanization is brought about. The progressive elimination of the low standard rural families may be gradual. There are special priorities, the rehabilitation of the displaced and the uprooted families, the progressive re-gearing of the economy and the final restoration and reconstruction. Permanent migration to the towns may not help, for that would go to deplete the labour force from agricultural avenues, with grave and bitter consequences for the economy in general.

The *restoration* authorities would not attempt this; on the other hand, they would like to go strong with the resuscitation of the agrarian sector. Still, the best solution may be to select the correct type of people for the right jobs and to redistribute the entire labour force as among the urban and the rural occupations. This would also go far to re-build the economy. It may be pointed out that the labour force should be taken as a whole, and not in segments, urban and rural. As such the urbanisation of the low-income rural families may also not materialise, for these rural families are more often than not, the unskilled type and hence unfit for several urban avocations, which might employ semi-skilled types of labour force. Still, income differentials tend to be considerably eased out with the result that there would hardly be any advantage in shifting to the urban areas for better incomes.

Embryonic Developments. In an economy, which may alternatively be termed as a backward one, economic developments are of an elementary and embryonic nature. In these countries, the process has just started and as yet they are in a backward stage of development. Capital formation (on which hinges mechanisation and increasing application of technique) is painfully slow, for this capital has to be formed out of current incomes which again are very low. Similarly, managerial skill and entrepreneurial ability are also likewise scarce. Capital goods may be imported, in the first instance, if the process of economic progress is to be accelerated. There may be institutional impediments, too, hindering the progress. The only alternative for the low-income rural groups is to migrate to the urban areas, where the economic opportunities are much more numerous than at home. Therefore, they migrate to the urban areas in search of employment and better income standards. Disparities as between rural and urban incomes is rather pronounced and may not be bridged in the near future, either. The only way out is to find out ways and means to accelerate economic development as a whole and to bring about a balance in the different sectors of the economy. The goal of acceleration of economic development and the maximisation of the net social product is attended with several difficulties, economic, social and even political. Still, the rural populations stand to gain, if temporarily, from migration urbanward. With the gradual ruralisation of industries, the urbanisation of low-income families might be very much reduced and the trend reversed towards de-urbanisation. But this is not so in the near future, for immediately, the trend is towards the urbanisation of the low-income rural people, the land-less and the tenants. This is the state of affairs that India witnessed for some time.

The Inference On analysis, we might say that the problem is rather complex, not because it is a fourfold problem, but because it is usual that various economic patterns are confusingly intermingled in the same political state. It would indeed be wild to expect that surplus economies would come to the rescue of the restoration economies and even if they did the main effort would have to be made by the devastated countries themselves. What could be done, immediately, is to recombine the rural and the urban productive factors with a view to increasing efficiency and productivity and also alleviate distress by the imposition and administration of various economic controls. The claims of embryonic economies are also sufficiently pressing and they could also progress if the advanced economies give them that technical aid, which is very essential to economic advancement. And verily, it is obviously well nigh impossible for the advanced economies to give unlimited help to restoration and embryonic ones. But it must be admitted that without improving the lot of low-income rural groups which predominate in the embryonic economies (which are in predominance in the world) the lot of homosapiens would be one characterised by economic disequilibrium and imbalance—a potent cause of recurrent conflicts. There is an urgent need for a reappraisal of the economic opportunities with an eye to the betterment of the low standard groups, whether they have or not migrated to the urban areas, and removing the disparity between the two.

Labour in Agriculture In this section, we intend to discuss the problem as a whole. Most of the labour force in agriculture is landless and usually shifting from place to place. This labour force has presented a problem that need be reckoned. The social reformer and the planner, would like to see the labour force become stable and settle down to work and, if possible get land also. It is unskilled and one that could be absorbed in any type of work. Generally, agricultural labour is unwilling to migrate to the towns except under stress. Its stay-at-home character also hinders its proper distribution in various industries, agricultural and non agricultural. Another problem that faces the investigator is that of the unskilled character of this labour force—how to train it and make it fit for various chores and how to make it more skilled, efficient and productive. The normal course of evolution for the farm labour should be to rise gradually to the status of a cultivating farmer. This problem is rather a complicated but one inevitable in almost all economies. In the backward economies, especially the problem is more complex and the lot of the agricultural labour is, to say the least, abysmal. Broadly speaking, the

agricultural labour force consists of landless labourers, forced labour and agricultural serfs, the last class being now nearly extinct. We propose to study the matter in detail in the next paragraph before we discuss labour dynamism.

The Picture. Coming to details, we find that even tenants are also labourers in that sense, but their problems are not a little different but of a special type, and we propose to discuss their issue in a separate chapter. The second class of labourers, the landless do form an important class. These people have not a plot of land to till, no capital to invest, they are only hiring themselves to the various landlords and tenants for help in the rush season. Their principal and hereditary occupation is agriculture, but they cultivate others' lands and not their own. The unit is the family because the whole family is hired, the male adults, the females and the children. Their employment is mostly casual; and they receive wages both in cash and kind, but mostly on a non-competitive basis. They usually have to move from place to place in search of employment and work. This class is often semi-skilled. Then there are the field labourers, who are a miscellaneous class, neither skilled nor experienced in tilling operations. Their labour is comparable to that of the coolie, for they undertake odd jobs on a farm. This class is highly mobile as the demand for this labour is seasonal; but they are likely to pick up work both in the agricultural and the industrial spheres. Having no land, no capital, no staying power and no specialisation they are at the mercy of the owner-cultivator who may or may not employ them. In the rush season, they seek employment with peasant proprietors, while in the off season, they find work in factories. The next class comprise agricultural serfs. They are at the bottom of the social ladder. True, that serfdom is dying in most parts of the world, still it survives in certain backward areas. The difference between agricultural (unskilled) labourers and the serfs is that the former are still free agents, while the latter obliged to mortgage their labour, in return for a small sum of money which may have been advanced to them in times of stress and need. Often the money is not repaid, and the labourer remains a bond slave of his master-creditor for a life-long period. This labourer, therefore, does not receive a payment in return for the work that he performs but only a bare subsistence, the leavings of the table. Thus he leads a sub-human existence only. Sometimes, children are pledged to life-long bondage for no fault of theirs. The next type that we should be able to recognise is *forced labour*, or what is commonly known in India as the *begar*. This is mostly aboriginal in character. These unfortunate people have to work under threat of eviction from the village or from the *ilaga*; they

work for some few days in a week on the landlord's estate, because they reside in his village. In return for this work they do not get any remuneration. Between the serfdom and forced labour is a state of semi serfdom that of illegal exactions levied on the labourers. "Taxes", or "fees" are imposed on village labour for permission to carry on certain trades or professions, these are convertible into labour performed on the landlord's estate. Agrarian serfdom, in its various forms exists only in the backward, or embryonic economies, in traces.

Dynamic Effects In reference to the dynamism of labour in the sphere of agriculture, we have to point out that the labour force under the passage of time, in the sphere of agriculture, behaves in a certain particular manner, distinct from the behaviour of the industrial labour. In the sphere of industry, there is trade unionism to protect labour as against his employer but agricultural labour is the most helpless due to absence of trade unionism among them, or unity in their ranks. They are also the victim of customs and mediaeval practices which tend to crush them by enslaving them only to wages regulated by custom. The labourer in the agricultural system is at the mercy of his employer without any limitations. There are no regulated hours of labour, and legislation still is in the process of evolution. In the backward countries the labour conditions are getting better. We have had occasion, in this chapter, to study the dynamic aspects of labour. The effects of mechanisation in rural areas and the reabsorption of the labour force, as a result of its displacement (due to mechanisation of agriculture), have already been studied. The urbanisation of the labour force, and the impact of urban migration have been studied above and their conclusions need not be restressed here. Still, the lot of the low class and low-income groups of agrarian labour requires to be improved before they could be brought at par with industrial labour. But some more points may be noted here. the gradual and growing consciousness among agricultural labourers, (may they belong to any category) is an important factor responsible for holding out to them the promise of an elevation. And then the movements of political liberation, which have been in progress in the backward and embryonic economies, are an effective and potent force in getting their lot improved, for that has rivetted the gaze of the statesmen to their wretched lot. With a shift in the administrative and political set up, new governments have tried to raise the lot of agricultural labourers, and they have also been successful in their attempts.

Labour Perspectives In the light of the above considerations, the prospects of agricultural labour are bright as far as

the future is concerned. In a dynamic sense their lot is on the improve, because of the factors enumerated above. Difficulties are encountered in the matter of enacting legislation for agricultural labour, but in the light of experiences gained in recent years, these difficulties are not insuperable. True, that hours of labour are not possible of regulation, for the simple reason that the nature of agricultural work is such as to call for long and odd hours of work because the continuity of farm jobs could not be broken in between. Still, some type of legislation is on its way to implementation. Legislation has been able to standardise labour chores, and also fix wage levels. In certain regions, the intensity of the work is also defined, and is required to be compensated at a high rate. Similarly, the decasualisation of the labour force has been attempted by the planner and the administrator alike. Agricultural jobs have been fitted into one another so as to give permanent employment of a continuous nature. And the conditions of housing have also received attention. Rural housing conditions have invited the special study of the planner. Another development is the abolition of forced labour, whether latent or apparent. It is a step towards raising of the status of landless labourer. And in this connection, mention must also be made of allotments of land to him in order to satisfy his land hunger and incidentally to raise his status in the village, because status in this environ is always associated with the possession and ownership of land ; hence this step.

Theory of Organisation. Mention must be made of the theory of organisation, as that is relevant to these points. Having noticed that the majority of ruralites are labourers, especially in the backward countries (which far outweigh the other parts of the world), we should recognise that the reorganisation of labour in rural areas would go far to provide a stimulus to rural life. Incidentally, that would make better the conditions of work. The traditional theory is that the farm labour be organised by itself, aloof from other trades and industries. This means that farm life is something exclusive and not connected with the other aspects of national life. Obviously this is untenable in modern life, when integration of life has proceeded rather closely, and especially when the "invasion" and "penetration" of urban and external influences have been of a marked character, too. An alternative explanation is of recent origin ; it states that farm life is a part of national life and its organisation should be along the integrated lines of social progress. Labour in agriculture is the core of this life, and its organisation should also be fitted in with the total national life. The farm labour, which has so far

been neglected, should be revitalised and given representation on various legislative and state bodies. A compromise between the two would be to let the farm labour develop in an evolutionary way and not copy the patterns set by industrial labour. Autonomous and unrestricted development of the agrarian labour force should accord to its needs and requirements. Still, it may be pointed out that even in the event of completely autonomous labour evolution, the direction to the developments needs to be given.

Labour Welfare Having discussed the theory of reorganisation, we might now launch on a consideration of the principles of rural labour welfare. All welfare proceeds from remedying the ills of the class for which welfare is intended. In this case the welfare would have to be typically local in its character and as such, the principles applied to the same would also be of a selective and discriminatory nature. We have to think of the general principles that govern the welfare activities of a planner. In this connection, it may be pointed out at once that only those activities of welfare should be pursued as are welcomed by labourers and enthuse them, for if the labour force remains passive to 'welfare' there would be little use undertaking it. Again, welfare activities should be of a relieving nature affording relief to labourers, in the very short run and not only ultimately. The labour problem is often of an urgent and immediate nature, hence, the remedy should also provide immediate relief. And then welfare work should be tangible and not invisible, for should he be able to appreciate, he would derive the greatest benefit out of it. Next, the principle underlying welfare activities should be in accord with the obligations of the labourer, for in case he is unable to discharge his duties well, the work done for his welfare would have been in vain. If the welfare is such that labour is in the danger of getting permanently unemployed or suspected by the employer, this welfare is of little use. And lastly, the welfare activities must be of an evolutionary nature, welfare must be gradual.

Summary To sum up, we must admit that the content of this chapter is of a variegated nature. Many have been the problems discussed, ranging from the nature of the rural work to work simplification. The practical aspects of scientific labour management, as applied to the sphere of rural labour was also brought out in an exhaustive manner, but the field is limited. The problem of work simplification, short of the application of machinery to agricultural chores, was discussed in detail and found to be a laudable attempt to put agriculture on an even keel. Next we saw the process of the displacement of labour and the problems connected with it. The problems of the rural labourer were discussed

how resettlement is brought about. The influence of urbanisation on rural labourers, especially, the low-income group, was also traced at length. How this impact is operative in different economies, was discussed and it was found out that the movement was also a two-way traffic. It is not to be excepted that labourers migrating to urban areas, in search of work and better income stood to gain always, often they lost, in point of real income. Next we viewed the picture from the over-all angle and described the five types of the agricultural labourers and studied their problems in rather details. The dynamic aspects of their labour problem were reviewed and we felt that the future held some promise for them. And lastly, the principles of labour welfare (in the agricultural sector) were detailed at some length. These principles have to be applied discriminately and with great caution, for, illiterate as the agricultural labourer is, he is very sensitive to the external stimuli ; and the welfare worker must wear a sympathetic garb.

Conclusion. In conclusion, we have to point out that the problems of labour in the realm of agriculture are divers and complicated. Certain conclusions, however, emerge from this study. In the first instance, the problems of the agrarian labour are entirely different from those of industrial labour. Secondly, the largest part of the rural labour is devoted to pursuits, directly or indirectly, linked to the sphere of agriculture and cultivation. In the third place, the rural work is something out of which some amount of satisfaction is also derived, for without this rural labour would not remain tied to land and the low compensation that they get therein. Fourthly, we found on analysis that economic disparities did exist as between rural and urban work, these disparities are clearly marked and reflect themselves in various aspects of labour problem in rural areas. Fifthly, we understood that the scope of scientific labour management in the agricultural sector, was limited, for obvious ; reasons agricultural jobs could not be standardised, nor could rural labour be rationalised. Sixthly, while analysing the problems attendant upon work simplification processes in agriculture, we concluded that the impact of work simplification on production was to raise the productive index in agriculture, while on its impact on labour, the consequence may be that of some displacement. Most cultivation jobs could not be simplified, except when the means of the peasant improved. The problem of displacement of labour was discussed and it was found out that economic progress failed to keep pace with employment of labour, especially in the sphere of agriculture. This raised the problems of the resettlement of the rural labour by the extension of the econo-

mic activities in the rural sector. Eighthly, we outlined the effects of urbanisation on low-income groups, and the conclusion that their lot does not always improve of necessity, in certain cases, even a deterioration sets in. And lastly, we reached the conclusion that the conditions of work in the rural areas are apt to improve with growing consciousness.

Labour Planning A difficult task awaits the planner, especially when he sets to plan for agricultural labour and improve its prospects. In the first instance he must drain away the surplus labour force, which may only intensify pressure of population on land. This means that alternative occupations have to be found for rural labour, preferably in rural areas. And it could only be achieved by means of either multiplying the employment opportunities, or by directing rural integration to those areas where is being experienced labour shortage. This is an uphill task. Secondly, the planner must take steps to raise the living standards of the rural and agrarian labour, this could be done by improving productivity in rural areas, and by insisting on the labour getting a higher share out of it. Thirdly, the task is to impart skill and training to the labour force so as to improve their efficiency and productivity, this means the extension of educational and training facilities in these areas, and in such a manner as to suit the requirements of the labour force. Fourthly, there should be complete integration of the various segments of the rural economy, so that the labour force also occupied its due place in the rural economy. This point is often lost sight of by the ambitious planners. And lastly, the rural planner must awaken rural labour to the need for improving the standards of both its work and its wages, for without this consciousness, the labourer would not participate in planning, and without this no planning could ever dream of being a success, even remotely.

CHAPTER XIX

CAPITAL AND EQUIPMENT

Distinctions and Definitions—Land, Capital and Equipment : Money, Capital and Investment : Capital and Equipment : Definitions & Distinctions. Classifications—Fixed or Permanent Capital : Circulating, Working or Operating Capital : Movable or Immovable Equipment : Machinery and Capital Goods : Farm Buildings : Types of Stocks : Requisites or Materials. Investments on the Farm—Fixed and Sunk Capital : Buildings on the Farm : Investment on Cattle : Equipment & Machinery : Miscellaneous Types of Investments. Efficiency and Productivity—Functions of Equipment : The Productivity of Capital : Determinants of Efficiency : Range of Efficiency : Efficiency & Productivity of Capital. Economics of Farm Machinery—The Types of Machinery : Sizes of Farm Machinery. Maintenance & Ownership. Mechanisation, its limits and extent. The Dynamic Aspects—Technique and Progress : Land and Equipment. Productivity and Mechanisation : New Horizons : Summary and Conclusions—Capital, Equipment and Machinery.

In this chapter, we propose to discuss the role that capital plays in agricultural production. From the point of view of agriculture, there is a significant difference between capital and other agents of production : the supply of the other agents, labour and land, is relatively fixed, in that they are not reproducible, while capital is. One thing that may also be pointed out in this connection is the distinction between money and capital, for both terms are used interchangeably in ordinary speech. It may be stated that in the economic sense, money may not be capital, it may only be symbolic of capital. Money, when it is invested, becomes capital. Every farmer, and therefore, every Agricultural Economist, observes this distinction when he makes his annual farm valuation : valuation could be made by listing capital goods on the farm, and also by putting a value on these goods; and in both, the distinction between money and capital is observed. Also is this distinction to be borne in mind when talking of the economics of production (here capital is an important constituent of production), and in the economics of financing agriculture (here money is rather important). Bearing this in mind, we could better visualise the scope of this chapter. We do not refer to money investments in agriculture, but only to capital investments. After distinguishing various similar terms, we shall classify farm capital, for that would lead to a better appreciation of the role that capital plays in farm production. In the next section, we focus attention on farm investments, buildings, cattle and equipment (machinery). The economic aspects of efficiency and productivity of capital investments on a farm would attract attention next. The

subject of farm machinery, which we also discussed from the labourer's angle, would be discussed in the following section and we shall notice the limit and extent of the application of farm machinery. The chapter would be rounded off with an analysis of the dynamic aspects of the application of the modern equipment to farming and agricultural production prospectively.

Distinctions and Definitions In this section, we propose to bring out clearly distinctions and definitions of various concepts used in this chapter. The term "capital" is so much confused that we need to clarify and define the scope of this term and the other allied ones. The various shades of meaning have to be clearly grasped in order to understand their implications. The first set of distinctions is with respect to terms, land capital and equipment, for these have distinct meanings. Second paragraph will deal with terms, money, capital and investment, for these are being interchangeably used although implications in the economic terminology are different from those in the ordinary speech. Third and last paragraph in this section would concern itself with other miscellaneous definitions of Capital and Equipment.

Land, Capital and Equipment In orthodox economic terminology Land refers to natural and indestructible factors of production as could not be changed in their locational aspect and as are the gifts of Nature. Capital, on the other hand is supplied by man and is thus reproducible, but not so. While the supply of land is fixed by Nature, the supply of capital is elastic in the sense that it is man who determines the same. This makes all the difference. Land, in the second instance, is indestructible, in the sense that no action could entirely wipe it out of existence (excepting of course by some natural calamities). Capital is not only destructible but also subject to considerable depreciation and ultimately needs replacing, too. 'Equipment' covers all produced instruments of farm production, excluding labour. The various produced agents of production are included in this category, e.g. horses, bullocks, buildings and even seeds and feeds. We may say, without much confusion of thought, that it is used synonymous with capital. The only distinction appears to be that capital could also be non specific or in a fluid state say money, while equipment is always specific, e.g. capital that could be used only for a certain purpose. This concrete capital (rather than the value of goods and instruments of production) is what 'equipment' refers to.

Money, Capital and Investment As pointed out in the introductory paragraph, the terms, money and capital are often

used as synonyms. This is incorrect. To repeat "money" is only with reference to the rupees, dollars or the pounds, while "capital", to investment made in the farm enterprise. Money, sunk in rural enterprise, is capital; and this may include equipment and reserves for emergencies. In the economics of production, this distinction is important, for it is "capital" that plays the more important part. In the finance of agriculture capital means money. Capital, in this sense, refers to funds available for investment in agricultural enterprises. The returns from capital sunk in these is also money. Investment, we may add, is that capital which is sunk in a certain enterprise and is, therefore, a form of capital, equipment refers to specific capital invested in rural enterprises. Investment thus assumes the form of equipment. In short, these terms are distinct and one does not shadow the other.

Capital and Equipment. As pointed out above, these terms convey very different meanings. In other words, "capital" is borrowed from economic terminology, while "equipment" from engineering. Still they convey specific meanings. The former refers to broad and wide implications, while the latter has a much narrower meaning. When we talk of capital, we mean investment; and when we refer to equipment we think of the instruments of production. It may also be said, in parenthesis, that equipment is a form of capital. From the national angle capital sunk in the agricultural and other enterprises is of paramount importance, while from the individual standpoint, it is equipment that increases production, and not capital alone. This may be said to be the significance of the two terms, apparently conveying similar meanings. From the production point, "equipment" is more relevant, for as we shall see with greater equipment the productivity level of agriculture is raised considerably, but not so with greater reserves of capital, nor with greater investments in the agricultural paper or bonds. The meaning should now be clear and we should also appreciate the distinctive roles assigned to each.

Definitions & Distinctions. A word about the scope of different terms in the sphere of agricultural production. One has to caution against the everyday use of the above mentioned terms, for though we have defined and distinguished these as between certain terms there may be some more that we shall define in the course of this chapter; their meaning and implication have to be clearly grasped, before trying to weigh the argument. The various distinctions have to be borne in mind in order to understand and appreciate the various aspects of the argument. Conveying different shades of meaning they correctly point to different angles of subject in hand, still the distinctions and the

definitions convey the correct sense as far as this dissertation is concerned even when they do not convey all shades of meanings in all spheres of Economics. In fact, we may depart from their accepted meanings. But no final word could be said about these and many others used in this chapter. The limitations of economic terminology and language are self-evident and the point need not be laboured too much. Whatever is said above is of the nature of an explanation of various definitions and distinctions and need not be taken as relevant to the above argument, except by way of elucidation and explanation. Still the difficulties of the analyst in the sphere of the agricultural economics are not insurmountable, for the terminology is sufficiently exhaustive to admit of the various meanings and their shades.

Classifications In this section, we intend to classify capital used in the agricultural enterprises. Many are its types utilised in agricultural production. Classification is of a functional nature and not of an exclusive type. Strictly speaking, this classification is not designed to be exhaustive and intimate type, for such an attempt is foredoomed. It may only be pointed out that this classification is in no way utilitarian in character, for the farmer-entrepreneur does not take it into account, he merely goes ahead with investments, deriving the best out of them and without at all bothering himself about the nature and character of capital or even attempting to classify it.

Fixed Capital Bearing the above preliminary remarks in mind, we set out to classify agricultural capital. The *first* class of capital is fixed or permanent capital. This includes all those types of equipment which could be used time and again, and which do not wear out very soon. This type includes permanent improvements made in land, and in this regard, the fixed capital may be confused with land. For it is difficult to distinguish between fixed capital invested and sunk in land and land itself. But even the most permanent capital is not very enduring, for permanent improvements in land also do have a time span in which to wear out, finish and exhaust. Still, fixed capital could not be finished in one usage, or in one operation, it would always take some multiple operations to wear out the improvements made in land.

Circulating Capital This is also known as operating, or working capital and is used up in the operations of agriculture. We have seed and the manure in this class. But the distinction is rather slippery for the after effects of capital investment in regard to investment of circulating capital persist even after it

is used up and totally consumed away. But it is equally difficult to classify livestock, used for breeding purposes, as it could neither be considered "circulating capital" nor permanent capital. In fact the distinctions between the two different types of the livestock is rather difficult to make, for if livestock be used merely for the purposes of being sold in market, it could be classified as "circulating" capital, as it is not permanent capital, but if the livestock is being used for the purposes of breeding or for the production of such commodities, as wool and eggs, it may be regarded as permanent capital. From the farming point of view, the classification of the farm capital in the above-mentioned categories, circulating and permanent types is not convenient, and we should have a different classification of equipment, livestock, crops, and the miscellaneous other requisities and materials that assist in the task of production. It would be from this new angle that we shall look at the various classes of capital goods. This will also, incidentally, provide us with another distinction between equipment (as understood by the agriculturist) and other forms of agricultural and farming capital. We propose to discuss various categories of agricultural equipment first, in the next paragraph. After having grasped that we shall devote ourselves to other varieties of capital.

Movable & Immovable Equipment. Having appreciated the implications of capital (employed in agriculture) and noticed the defects of the same classification, we pass on to the new classification that we have adopted in preference to the one we discarded. Equipment could either be movable or immovable; and mainly consists of the durable type or capital goods. Immovable equipment is that which includes buildings, roads, fences, etc. These are described as landlord's capital. Movable equipment, on the other hand, includes machinery, implements and tool that the farmer uses in his work. These the tenant or the farmer supplies himself, and are commonly known as the peasant's capital. It may be pointed out that it is rather difficult to strictly categorise various classes of equipment, for the one shades off into the other and both are not mutually exclusive. Movable and immovable forms of equipment are not rigidly definable, for if equipment becomes rather bulkier, it is immovable. Machinery, instable permanently is "immovable" while if standardised and portable, it becomes "movable". It may, therefore, be said that this classification is not strictly exclusive.

Stock and Crops. This category of agricultural capital belongs to the *living* class, capable of growth and decadence, as crops flourish, decay and perish. See : 30, with livestock, which

could be subdivided into three categories, this subdivision is also functional. The first is *work stock*, by which we understand livestock used for haulage purposes and in connection with agricultural chores. This may include horses, bullocks and other such yokes. *Productive stock* refers to that stock which is required for the purposes of direct production. This category includes breeding stock, for the purposes of progeny, livestock for their dairy products and other animal products, like eggs, milk and meat, and permanent crops which yield harvests more than once, such as pastures and fruit trees and other types of plantations. The third category is the *stock-in process*, which refers to annual and seasonal crops and the livestock which is being reared for the market. It may be pointed out that stock differs from equipment in that the stock is animate, while equipment is not. As such, stock is not a permanent asset, stock appreciates in its life cycle, while equipment depreciates. And secondly, even in the case of the livestock it is possible to get rid of the same as soon as deterioration sets in, this is true of both livestock and crops, the livestock is usually sold or butchered as it begins to depreciate, while crops are cut when in the prime of growth. But we must also beware against the risk of loss to which all types of stock are exposed, the risk of infection, disease, pestilence, accident and weather.

Requisites or Materials The last category is that of the requisites of production. This class of capital is parallel to circulating capital. The requisites or materials of production are all those things, which though essential to the initiation and completion of production, are still not of an enduring nature for they are absorbed in the process of production and do not last for more than once. These things include food for live stock manures and fuel. These various items are consumable in one single act of production and are classed as a distinctly separate item. They need to be distinguished from equipment in that the former is not of an enduring type, while equipment is durable in its usage. And the requisites and materials are also distinct from stock in that the latter is animate, while they provide nourishment to animate stock. And then the materials of production are also highly perishable. They are "consumable" capital. We need not stretch the point further, for it should be clear that materials or requisites of agricultural production are essential to productivity on the farms. Further subdivision of materials may be attempted, and these may be categorised as *seeds, manures* and *miscellaneous materials*. Under the *first* class are included all those things which are required for cattle and animals, while in the *second* category, *fertilisers*, are included all those things as are necessary to provide nourishment to soil and enable richer crops to grow. In the *last*

category are included all those as may get consumed in the process of production, such as seed and fuel.

Machinery and Capital Goods. Taking up the thread of the argument, we come across the distinction between machinery and other capital goods. Machinery, though rightly regarded as a form of equipment, is treated in all forms of economic analysis, as a distinctly separate productive agent. Agricultural machinery is either fixed type or mobile. The former is used in processing agricultural produce, which, for want of proper spot-marketing facilities, has to be processed before it could be saved from immediate perish. The latter type is used for general jobs in agriculture and cultivation, it is for work simplification and employed only when circumstances warrant its cheap usage. Machinery is distinguished from equipment; while equipment is a broad term which includes all machinery, implements and tools, though it may be pointed out that machinery includes only those types of equipment that are highly specific innovations, simplifying agricultural chores. And machinery is also distinct from capital in that the latter term includes all sorts of equipment and machinery, while "machinery" refers only to mechanical appliances, designed to save work and are highly specific. In the strict economic sense, machinery is the most specific type of equipment. Under "capital goods," we mention such goods as are in the process of production visibly. These are known in economic terminology, as *goods of the second order* and include seeds, manures, machinery, equipment, tools and the like. It need not be inferred that capital goods are not necessary for farm production or for rural enterprises, in fact they are of much greater importance than even machinery, for while the average farmer may not be able to afford the installation and application of machinery, he has, of necessity, to use capital goods, which are indispensable to process of production. Without capital, no production could be initiated, not to speak of its completion or efficient continuation. But the modern trend, we noted earlier, too, is towards mechanisation of agriculture, and it is for this reason that we intend to devote a full section to the discussion of the same.

Farm Buildings. Farm buildings are also a form of capital investment. These include barns, storehouses, cattle-sheds and residential buildings. They are also, a distinctive form of capital for being characterised by some special trait. As having the longest range of investment, their dis-investment is not very easy. The cost of farm buildings varies with individual farmers in that the farmers may construct these themselves. Farm buildings are a non-specific type of investment, so far as

most of the farms are concerned for they are seldom constructed for a specific purpose for which alone they may be used. Their value gradually declines with wear and tear. And it must also be understood that farm buildings decline in value even if they are not used they have to brave the inclemencies of the weather which wears them out. And these may also be given free to farm labourers for most labourers are attracted to those farms as could afford them some accommodation. But their value is limited by their replacement costs. On the other hand their value may fall below cost when their anticipated values decline, prospectively speaking. Depreciation of the farm buildings is another factor to be reckoned with by the farmer. From the above analysis we infer that multiple forms of capital are used on farms. We could reclassify capital as Capital Equipment, Machinery, Stock Requisites and Buildings. It may also be pointed out that this classification is not exclusive, but overshadowing one another. Still in the light of this analysis it is convenient

Investments on the Farm Next we talk of farm investments. Capital invested, is in either form fixed or floating. Still it is an important form of investment and has to be reckoned with. This is the usual economic approach. But a better approach from the peasant's point of view is that of *landlord's capital* and the *tenant's capital* the former is that which the landlord invests such as his farm buildings roads and approaches, drains and other immovable types of investment. Tenant's capital includes implements of farming machinery, livestock and standing crops. The money that is available for day to day transactions is to be included in *tenant's capital*. But this approach is defective in that it is not very scientific and therefore has to be abandoned for reasons of scientific accuracy. One characteristic of the agricultural investments is that the ratio of permanent to working capital is rather high. Another one is that the amount of capital investment per capita (if it is sought that agricultural enterprises be modern) is relatively high, especially when it is remembered that agriculture is not as mechanised and standardised as other pursuits are. But, judged from the standpoint of business the investment per business unit is rather low as the small scale of the farming unit is predominant. Again, the range of investment in farming is much wider than in any other industry for very obvious reasons. And, lastly assessment of these investments is rather difficult, because calculations vary on account of the seasonal nature and the differing basis of the valuation systems.

Fixed and Floating Capital The next subject, to invite our attention is the form of capital investment in agriculture

There is *fixed* capital, alternatively known as *sunk* capital; this includes such investments as are made in buildings and other types of immovable and movable equipment. All types of specific capital are included in this sunk and fixed capital, for the capital "sunk" in the various forms of equipment could be made fluid only with difficulty and at a loss. It is, therefore, that such investments are styled as sunk or fixed capital. *Floating* capital, on the other hand, is available for the purpose of investment, but is actually not an investment, but its potential form. This is capital in money fluid or liquid form. It is available for the purpose of investment but could hardly be termed as such; it would be investment only when actually made. But it is important from another view: investments in the future would be limited only by the amount of floating capital available in agriculture and to the agriculturists.

Buildings on the Farm. Recapitulating, what we said in the last section, we recall that farm buildings are dissimilar to machinery and other investments, for they are of a peculiar type and have characteristics which other forms of investment do not have. Their depreciation proceeds regardless of use and this seems to be visibly less because of their longer life. And unlike machines, depreciation is not hastened by being used to the full. And then their maintenance and renewals are more important part of building costs than in the case of the other types of equipment. Buildings could be sold at will, but not hauled or moved to another place, as machinery could be. And investment made in buildings is not recoverable except over long periods of time. Farm buildings have no value except what they would contribute to the process of production. Investment in buildings, therefore, easily goes out of step with farm requirements, overinvestment and underinvestment are possible. It is only in periods of comparative agricultural prosperity that farmers may be tempted to invest in farm buildings, while in times of depression, they would hesitate to undertake huge and heavy costs, except when contributing to the construction of the same. A wise farmer usually constructs such buildings as could serve a number of purposes; so that economies in the construction of the other buildings be effected. But these could also be *specific* buildings which house only one type of equipment, and this is, obviously, possible on large-scale farm unit.

Investment on Cattle. The next important investment pertains to cattle and livestock. We termed this investment as "work-stock"; it partakes more of the nature of equipment than any other type of capital goods. In the case of livestock, the input is feed and the output is productivity and amount of work that

livestock performs. And, therefore the efficiency of livestock would be input output ratios. In respect of depreciation there is a difference between livestock and machinery, for work animals and cattle *appreciate* till full grown and then they begin to depreciate. But this depreciation period is cut down by a calculating farmer, by selling and slaughtering the useless cattle. The depreciation of the work stock is *fixed*, for the growth of cattle is nearly the same both under heavy and light work. *Productive* livestock also appreciates and depreciates exactly in the same manner as *workstock*. We could instance the cow and the hauling animals both appreciate in the first years of their life and the depreciation comes about in both when the prime of life has passed away. Similarly meat animals appreciate while growing, the principal difference being the maintenance input that animals and cattle require. One point more, and that is that productivity, not made use of is lost and probably lost for ever, it could not be compensated for by increased productivity at a later stage in the life span.

Equipment and Machinery In this paragraph, we discuss investments made in equipment and machinery. The main function of equipment is to assist in the production process, in this sense, its productivity is only of an indirect nature. It could be measured by the method of *margins*, that is, by increments to net production. Equipment enables labour to exploit land in a better manner than without its assistance. Also, equipment may ease rush time, as for example, in the harvesting season with the aid of harvestors. Thirdly, equipment may assist in the protection of plant and animal life as by the use of spraying machines. Fourthly, equipment may also make possible the growth and development of superior varieties of farm produce, as by sterilising equipment on the dairy farming business. And lastly, the use of equipment and machinery may also lessen boredom and fatigue and thus effectively contribute to productivity and efficiency of the labour force. In the light of these facts, the use of farm equipment is extending that is why it is becoming more and more important form of investment. That means that we must take into consideration its cost, maintenance and renewal. As regards initial cost, the farmer has to assess whether he could or not, afford the equipment. And then has to be taken into consideration the depreciation of machinery and the recurring costs of equipment too. The cost of repairs and the rate of the wear and tear has also to be counted on farms employing a large amount of equipment. And lastly, renewals have to be pre-calculated by the farmer, if he has to invest in specific forms of equipment. We must also appreciate the fact that farming

operations are of a seasonal nature, and the installation of expensive machinery and costly equipment has to be justified by the nature of the operations. In the case of harvesting machinery, which could only be used for a limited period in each year, the cost has to be weighed as against the contribution that the equipment may make to farming productivity. The farmer has to guard against the danger of overcapitalisation in equipment he proposes on the farm; the farmer has to see that he invests in only those forms of equipment that have a chance of being used to the optimum. These investments have to be compared with those that may as well be made in labour that the farmer could have employed.

Miscellaneous Types. There are other types of investment which are made in the field of agriculture, and which, though not so important as those that we have discussed, are still relevant to this analysis. The farmer may invest in feed that he stacks for the season, in the hope that it will suffice. And he may also stock crops in the hope of selling and disposing them at better rates and prices, this would also be considered as an investment, though only from the strictly theoretical point of view. In this sense, the standing crops may also represent equipment, interpreted in the broadest sense of the term. They are definitely investments, which the farmer makes in the course of agricultural works. There may also be other types, such as money invested in agricultural bonds offered by the state, or by banks. These are also forms of agricultural investments, though, in this case not by the farmer himself, but by non-rural and non-agricultural interests. Similarly, investments made in the co-operative credit societies or in other co-operatives also represent other forms, for they are for purposes of agricultural improvements. Their field of operation is very vast indeed, and we may regard these other types of investments as being indirect, to be discussed elsewhere.

Efficiency & Productivity. In an earlier chapter, we had occasion to distinguish between the twin concepts, efficiency and productivity. But here again, we shall make a distinction between the two from the point of view of capital investments. It is the efficiency of capital goods and their productivity that we shall take into consideration now. Equipment and capital of all kinds vary in capacity and efficiency. In this sense, we might take the example of feed and labour requirements therefor or their capacity: similarly there is a wide variation in their product per unit of output, that is their efficiency. In this case, we need to distinguish as between the *digestive* efficiency; and *economic* efficiency; the former refers to the feeding capacity of the work-stock while the latter to the "efficiency" of cattle.

Similarly, there is a wide variation in the efficiency and capacity of different mechanical appliances, in use on the farm. These differences arise because of the fact that the suitability of different machines varies with regard to different conditions of farming and agriculture. One appliance may be more useful on a certain farm and may have optimum productivity for one specific type of production, while another machine quite inefficient and unproductive and, therefore, costly. We shall, in this section, delineate the picture of farm life and the productivity thereupon from the point of view of efficiency and productivity of the various forms of capital. We shall also discuss the various determinants of efficiency and, therefore, of productivity, for as we learnt in an earlier chapter, efficiency is one of the major determinants of the productivity. The range of efficiency would also receive our attention, for this is important from the standpoint of farm productivity and the fullest exploitation of capital. The section would be concluded with a discussion of various factors responsible for the productivity of capital and equipment.

Productivity of Capital Capacity and efficiency of capital goods, employed influence its productivity. Right type of capital, equipment and stock, if used for the suitable type of production would definitely yield the best results. The main function of capital is to assist in production and to improve the productivity of labour and the land in use. Hence from this point of view, the productivity of capital is of supreme importance. It could be measured by net addition that capital makes to total productivity. Thus this has reference to labour used in conjunction with capital employed, that is capital per capita. Greater productivity has resulted from improvements in machinery and stock. The farmer would secure higher profits if productivity is at the maximum and he would purchase that stock and that machinery which has greater capacity and efficiency. Similarly, the trend in the employment of the mechanical appliances has been towards the selection of that which has greater capacity and efficiency in point of the work that he seeks to perform. Certain forms of machinery, that could very considerably increase product per man are easily out of his reach for mostly he is of the small scale type and his means limited. And then the size of the machines is also not reducible in most cases, without a decrease in their productivity. To fit in its sizes with that of the farm or agricultural enterprise is another headache for him and in the event they fit in with one the productivity of the capital goods would be maximum or optimum.

Determinants of Efficiency What are the determinants of efficiency, as far as capital is concerned, is a question that

faces every entrepreneur-farmer. *Suitability* is the first determinant and easily the most important. If the capital goods are of the right size and the right type, suitable to the enterprise in hand, then efficiency is the maximum. And the second determinant is *continuous employment* of capital goods, for if the capital goods are employed without a break but continuously, then their efficiency may be maximised. In the event of their employment by fits and starts, they would lose in their efficiency, as in the case of farm buildings (a durable form of the capital goods) the depreciation sets in even when the farm buildings are not in use. Same is the case with the various types of equipment and machinery, for their maintenance and repair costs would remain nearly the same, even if not in use. Happily, such forms of machinery have innovated as could be used for a variety of purposes, we have learnt about this aspect in an earlier chapter, on "Modern Farming". Another determinant of efficiency is the form of the capital investment that is made. If the form of the investment is in accord with the nature of the enterprise the efficiency is maximised, otherwise not. Another determinant of the efficiency of the capital goods would be their capacity to reduce recurring costs, for to the extent these are reduced by the introduction of capital goods, to that extent they become efficient; this may be taken as the indirect determinant of their efficiency. To what extent the capital goods are able to contribute to the productivity on the farm also is a measure of their efficiency and productivity. And in the last instance, another indirect determinant is the rate of depreciation.

Range of Efficiency. Another point is the range of efficiency of capital goods. It has already been pointed out that the capital goods (all their varieties) differ very widely in their range of efficiency. From the standpoint of evolution of machinery, the range of the efficiency has varied considerably, for the earlier machines were of low efficiency; the primitive implements of production were of a very low range of efficiency, while the modern implements of agriculture have a high range of efficiency. With the employment of the modern machine the farmer has been able to effect a great saving in the labour used and the time employed on particular jobs; thus the range of efficiency has considerably increased with the employment of modern machinery. In the case of machinery, the supply could be increased indefinitely, as far as theory is concerned. But in the case of the stock, it is not possible to do so, for the number of cattle have to be limited by the amount of land on which to breed and raise them. In the matter of stock, in particular, the range of efficiency is very wide, simply because the

better breeds are able to put in greater work and thus their capacity to work is rather high and the range of efficiency consequently very high. The potential range of the stock could also be raised by means of undertaking better breeding and maintenance, feed and care that is bestowed on them. In the matter of equipment, too, the range of efficiency depends both on the type of the equipment used, and the skill of farm hand who operates the machines. Thus their range also differs, in the first place, as far as the types of machines are concerned, and in the second instance, on the use that is made of them. Not only this but the range of efficiency is also variable in the case of the requisites and materials of farming, for with the development of science and technique, better seeds may be available and the ordinary ones made to raise better crops by means of better manuring and fertilisation. In the case of farm buildings, too, the range is rather wide, depending on the use made of these buildings and their character.

Efficiency and Productivity Concluding this section, we observe that efficiency and productivity of the capital goods is not uniform. That is so because of the wide and differing ranges of the efficiency of capital goods, and it is on this that their productivity depends. Thus the first point is that capital goods are widely variable in their productivity. Could we at all raise the productivity of capital goods? This is rather difficult to answer in the short space at our disposal. Still, it may be pointed out that productivity could be raised by improving capacity and efficiency of equipment and stock. It is possible in land economics that the equipment is capable of increasing both in quantity and quality, rather than to increase land. It is in the matter of new increments of land and capital that both differ for the supply of the one is rather elastic and the supply of the other (land) inelastic. And the efficiency and the productivity of the capital is what compensates for deficiencies in regard to the further non-availability of land. Thus the irresistible conclusion seems to be that efficiency and productivity of capital goods is possible of increase, because of improving technique, etc.

Economics of Farm Machinery In this section we analyse the economic aspects of the employment of machinery. Thought in this direction has progressed and as pointed in the last chapter, the initial fascination for the usage of machinery seems to be on the wane. This analysis, though generally applicable to the other capital goods, is to be confined to the various aspects of machinery, for the reason that "machinery" is altogether different from these goods and has to be given a place of some distinctive importance. In this connection, we

may mention that the inputs in machine operations could be classed under two headings: those connected with the machine itself, like depreciation, fuel, etc., and those connected with work, like labour and power. Some part of the depreciation is more or less fixed in view of the fact that even if machine were to remain idle, this would go on. But depreciation is by far the largest part of the cost. Renewals, repairs, and replacements come next in the costs of maintenance. The total costs of these is spread over the whole life span of the machine, the fixed part of depreciation, which accrues whether the machine is in use or not, is known as *obsolescence*. The other part may be termed *maintenance*. Wise and calculating farmers cover the risks by *insurance*. And they may also set apart a certain sum every year to cover the replacement, renewals, and repairs so that these are *spread*.

Types of Machinery. Various are the types of machines. And the farm manager or entrepreneur may employ any that suits him. He may either have general purpose or special-purpose machinery; or a high-quality high-priced machine, or a moderate-priced machine, or a cheap machine; or a new or a secondhand machine. Any one of the above choices could be made consistent with his means and needs. Not only is cost to be taken into consideration, but also the qualitative aspect of their output. And working conditions and suitability of machine thereof have also to be reckoned. First is the relation between price and the quality. For an average farmer, selection would range round a moderate price. He may also apply the principle of combining capacity, efficiency and productivity of a particular machine in order to buy the best. In regard to machines already in vogue, the farmer has a rough idea of their efficiency, productivity and suitability. Second consideration is that of having a new machine to replace the old one. This decision involves calculation of quality and output, for the farmer would take the new machinery into consideration only when he has been able to afford its cost. The third consideration is that of lowering the costs of farming; such machine may be installed as could lower farming costs and also raise his competitive power. Next determinant is employment, for if the machine is idle most of the time, that machine would prove rather costly. And lastly, is the most important consideration of the nature of farm work, for that type of machine would be employed (and purchased) as fits in with the farm work, its character and nature. In this is included the size of the farm, for the employment of machinery on the small farm often proves uneconomical.

Size of Farm Machinery. Close attention has to be paid to

the size of the farm machine, for it is the size that also matters in productivity and efficiency of machines. In case the machine is too large for work, it may mean that extra large costs of maintaining and working them would be required. Not this only, but the machine would be idle for most of the time. It may also require extra large power consumption to work it. In short, such a large unit may prove to be expensive. If, on the other hand, the size is quite small, the total work required to be completed within the scheduled time may not be finished and the labour force might have to remain idle for some time, this, too, is bad from the point of view of farm economics. The machine may have to be over-worked with the result that the depreciation, repairs, and maintenance costs become rather excessive. Again, it is not economical to use this small machine. Farmers have to use extra-vigilant judgment in selecting the right type of the size of the machine they want to employ. From the theoretical standpoint, the farmer has to equate all the various costs and find out which is the best size of the machine for his particular farm. It is not the total costs but the marginal ones, as in all economic calculations. The extra costs incurred on machine might be worth while, if the time saved is put to better advantage, or if the labour shortage is being felt and could not be combated otherwise, or if the farm family wanted to be a little easier and more comfortable in their work and routine. But the fact remains that the size of the mechanical appliance must suit the work on the farm, both in quality and quantity.

Maintenance & Ownership A longer life for a machine is possible by servicing, renewing and repairing it. And a shorter life would result from neglect, in regard to its repairs and renewals. Regular care, frequent inspections and routine servicing of the machines ensure longer life for them, while slip-slop care of the same would shorten the term of their service. The goal and objective in the upkeep and servicing of machines is to spend the amount on the particular machine as would give the highest utility at the least cost, and also keep it in good working order. This means that the renewals must be made much in advance of breakages and that more frequent inspections are required to ensure that the machine is in good working order. Overhauling and servicing should be done preferably in the slack season, for then their cost would be low. Another important point to be noticed, is that the machine must be protected against weather by giving it a shed, which may be only an improvised one, but sturdy enough to serve the purpose very efficiently. Hiring a shed may also solve the problem, and it all depends on the means of the farmer. Regarding the ownership

of machinery, it may be pointed out that this may also be joint, group and or co-operative. Same about the distribution of the working time, during which they may be worked. The latest trend in this respect is to own the machinery jointly or co-operatively. Formal agreements (in this respect) have to be executed, beforehand. But it may be pointed out that joint or co-operative ownership could only be possible when agricultural tasks permit for if the machine is required for the same agricultural tasks by every farmer, the co-operative ownership is rather a difficult job.

Mechanisation, its Limits and Extent. The question that confronts the farmer is whether or not to mechanise. Should the farmer shift to machine operations or not? This is an important issue. It is possible to answer the question on the basis of some data which a farmer may complete for himself. It consists in preparing a comparative operating statement, the budget. It is by means of this budget that he could find out if the employment of machinery is advisable or not. The balance between the receipts and expenses and how the same is influenced by the usage of machinery will be the decisive factor in this respect. The farm family would be able to judge if they are in a position to make correct estimate as to the actual saving in point of labour and the gain in productivity arising out of the employment of machines. There is also saving in respect of power and labour; and the farmer has to calculate all this. In this, state agencies could be of help. Regarding the extent to which the farmer may use machines, he would have, first of all to assess the application of machinery to farming chores, and the possibilities thereof. And in the second instance, he would have to consider how many of the farming tasks (as far as his particular farm is concerned) admit of mechanisation. This means that mechanisation has, in essentials, to be selective, for surely, all jobs could hardly be mechanised. And the farmer has to weigh the advantages of employing machinery in a certain set of work as against the disadvantage of not doing that. Also he should extend mechanisation, but consistent with the scale of enterprise; in large-scale farming mechanisation is often of advantage, while in the small scale it is hardly economical. As pointed out elsewhere, limits to mechanisation are imposed by the nature of the enterprise, as in the case of processing work, machines have limitless potentialities; while in other jobs as tending cattle, machines have very limited scope and few potentialities.

The Dynamic Aspects. Having appreciated the economic implications of the application of farm machinery, it is proper that we study the problem of farm equipment in its dynamic perspective. In fact, it is the dynamic aspect that is the most

important. Recently, the advances in farm equipment and machinery have been quite rapid while the standardisation of agricultural capital has also proceeded apace. Though we are not concerned at this stage with the implications of agricultural paper, still the point that needs to be re-emphasised is that popular awakening in this regard has even outpaced other achievements in other fields of agricultural technique. Time was when the system of agriculture was labour-intensive, with the result that farming technique was at a comparatively lower ebb, but now things have changed with the result that tillage has become capital intensive, with a greater and increasing emphasis on the application of technique, equipment and machines. And, daily, more and more emphasis is being placed on the equipment aspect of agriculture, and this is happening in the backward economies too. This is significant. But we have to notice the trends in regard to the impact of progress on technique, the application of modernised equipment to the sphere of land and cultivation thereof, the increase of productivity by mechanisation and lastly, the perspectives.

Technique & Progress We underline the impact of progress on agricultural technique. The growth of better and more productive technique has been phenomenal indeed. And this has been significant for the agriculturist who wants to adopt better machines and good equipment for this work. The first aspect of progress is that the labour intensive type of agriculture with its only low incomes, is yielding to the capital intensive one. In the second instance, the application of machinery in the sphere of livestock is also coming into vogue, especially with the increase of scientific and biological knowledge that is being increasingly made available to the farmer. And thirdly, the trend is towards the substitution of machinery for cattle who are being released for better type of work and for meat and milk production. There is greater continuity of tasks in machine work and now complete tasks can be performed by machines. This is in evidence in the field of processing, (subsidiary to the main agricultural jobs) where a complete job is undertaken by the machines. And then another improvement may be noticed and that is the standardisation of the machine parts with the result that renewals and replacements are now easier, and also the costs thereof, much reduced. And various sizes of machines and equipment are available to suit all scales of production with the inevitable consequence that the progress of mechanisation has been speeded up. mechanisation and modernisation has enveloped even the smaller farms. And then all purpose machines have also been perfected with the beneficial consequence that the farmer may now purchase only one machine instead of a number of them, as he did formerly.

have to. It is in this manifold manner that technique has been affected by advances that have been made in the sphere of progressive machines.

Land and Equipment. Taking the case of land, in particular, as representative of all other types of agricultural enterprises, we find that the advance of modern equipment has been rather rapid, and hardly is there a field of tillage that has not mechanisation applied to it with profit. The saving in point of man-hours is considerable, as combating labour-shortage. Mechanical harvesting, sowing and cultivation have all been brought within the realm of usual practice in land tillage. For instance, most farmers in the West are able to organise their tillage operations and dispense with cattle. This increases productivity and lowers costs. Then tractors are being so constructed as to suit the smaller farms, and the pockets of the poorer peasants; such tractors are available as could suit the family and even the part-time farms. This means that tillage operations could be more popularly mechanised. Also tillage equipment is being supplied in sizes and types so as to suit other subsidiary operations; this means that equipment and machine costs are being reduced considerably. Such machines are available as could shift from one task to another especially in the tillage work. And machines have also been produced which could undertake all jobs, big and small, too; the adaptable machines would suit the farmers who may wish to expand their farming enterprises. New developments in technology have been responsible for stimulating these mechanical innovations.

Productivity and Mechanisation. The next point that deserves to be noticed is the relationship between productivity and mechanisation, as in agricultural operations. Bearing in mind the examples that have been given in the above paragraph, we find that productivity on land has increased as a result of increasing mechanisation. In the other spheres of agricultural work, too, the increase of productivity has been registered. For instance, in the field of dairy-farming, the popularisation of the warm milking parlour has been due to the increase in milk yield, while the use of milking machine is responsible for the production of better quality of milk and an increased quantity, sometimes. Bulldozers, brush-cutters, and other such machinery is also being employed, increasingly to clear the land for tillage and cultivation, and with good results. This type of equipment and machinery is also used for the purposes of removing pebbles, and stumps from land, with the result that labour is considerably saved and the time-lag in initiating production overcome. Obviously, this results in increased productivity per acre. Gullies and drains could also be

filled in by means of machinery, specifically available for the purpose. More examples could be given of labour saving devices, which ultimately result in the increase of farm production. Directly, too, the increase of productivity could be evidenced by the application of machinery. In the processing industries, the application of machinery leads to greater productivity, for instance, in jam-manufacture or in the canning and the tinning industries, the application and employment of machinery results in quicker work, thus increasing productivity. It is evident, therefore, that the application of machinery increases farm production, whether in the sphere of tillage, processing, or any other work.

New Horizons Talking prospectively, we discover that the increasing application of machinery (if it does not displace labour, or does not create any other similar problem) results in heightened agricultural prosperity and also increased productivity. In the field of livestock farming, for example, the opportunity, by the increasing application of machinery, is that of multiplying the superior quality animals and cattle, and of eliminating the inferior breed, and this evidently, means the improvement of both quality and quantity of agricultural (livestock) produce. New designs machinery serve to replace the older types with good results for farm production, these new designs give better results and are economical, both in the sense of being more productive, and less costly in initial installation and maintenance. It would not be incorrect to count upon the achievements of machinery in the field of agriculture, with the anticipation that the disparity of income and earnings as between industry and agriculture, to which we made detailed reference in the last chapter, is also likely to disappear, as far as the foreseeable future goes. We may conclude, in the light of these observations that the improvements in the mechanical sphere promise to be continuous, and (if this be conceded) the impact of these (continuous improvements) is to make farm equipment more useful and increasingly productive. And if the second stage of the argument is correct, then the future does hold out the optimistic view of heightened agricultural prosperity as costs tend to fall and produce to increase. And this trend appears to be strongly indicated in spite of the fact that the supply of land and other natural agents of production remain relatively fixed. But it must also be remembered that this argument is applicable only to advanced countries, for in backward countries, the application of machinery to the arts of agricultural production is very very limited and slight. This means that the prospectiveness of the agricultural system in the advanced countries, appears to be bright in the

light of the contentions advanced above. But that need not be so, for the process of agricultural reconstruction and improvement need not be halting one in the backward countries, in view of the growing consciousness about agricultural policies in those regions. Verily, then, the application of newer mechanical and scientific devices to agricultural production in these countries need not always be condemned to the old and antiquated structure and be of quite an unremunerative character either. And then their cultivation systems may not have to wait till they get *qualified* for the increased application of the new mechanised technique. Technique and mechanisation have advanced to such heights and perfection that the mechanised implements are now available for the smaller and smaller units, which characterise agricultural systems in backward economies.

Summary. In summary, we could assert that the subject matter covered in this short chapter is of great significance from the theoretical point of view. It may be pointed out that a definite point of view has been presented in this chapter which deals with capital, equipment and mechanisation. Starting with distinctions and definitions of several concepts in use, we found that land, capital and equipment, though conveying different meanings, were yet interlinked in substance from the agricultural angle. We also distinguished between the terms money, capital and investment, and learnt that there was more concreteness as we passed from one term to another. In the next section, we classified agricultural capital into *fixed* and *circulating* types and equipment into *moveable* and *immoveable*. It was also found out that agricultural capital could be classed into capital, equipment, stock, and requisites; and though machinery could not be strictly included in this classification we had reasons to point out that it should be treated as a separate category, too. Farm buildings were also to be regarded as distinctive investment. In the next section, we discussed farm investment; and in this context, had occasion to make references to sunk capital, cattle, buildings, equipment and machinery, and also assessed the part each played in agricultural investments. In this connection, we also appreciated the rôle assigned to the miscellaneous types of investment, such as agricultural paper and bonds. The next section addressed itself to the problem of efficiency and productivity of capital and we understood how the one depended on the other; we had to recapitulate what was said in an earlier chapter on the inter-relation between capacity, efficiency and productivity. What are the functions of agricultural equipment? This question was answered in the very first instance, for

without a clear understanding of the same, the problem could be hardly visualised in its proper perspective. The productivity of capital, its significance and determinants was the next to be talked by us. Another subject of relatively great importance but often lost sight of is the range of efficiency to which we devoted some space and discovered that the range of productivity as a 'factor of production' was of no mean importance in the sphere of tillage as also in other agricultural enterprises. Certain conclusions were drawn in the light of the premises advanced about the productivity and efficiency of capital employed in agriculture. The next section dealt with the economic aspects and implications of farm machinery, the various types of the same, and the sizes of machinery, its maintenance and ownership, and finally the limits and extent of mechanisation of agricultural enterprises. It may be repeated that the treatment in this chapter was not a little different from that in the last chapter, where the focus was on labour and the things adjudged from that standpoint. The dynamic aspects of the same were explored in the next section, which we devoted to various subjects like the impact of progress on agricultural technique, the application of modernised equipment to land cultivation and the improvement of productivity as a result of mechanisation. We had some perspective in respect of equipment and the application of machinery to the same. In this last paragraph we assessed the role of mechanisation on the system of agriculture as it be.

Conclusions In conclusion we might say that the subject discussed in this chapter has been of a controversial nature, and we have tried to present an analytical aspect of the same. It may be difficult in the light of the differing viewpoints given, to draw definite conclusions. Still some points and conclusions are pronounced. In the *first* instance, we established that the role of capital and equipment is of an increasing importance in the sphere of agricultural operations and tillage. Although it is difficult to mechanise in the agricultural sector, still the progress of technique has been enviably rapid. Secondly, we discovered that investments in the field of agriculture have been of a paramount importance, with the result that the modern farming is fast becoming capital intensive, it is only in the older countries (embryonic and backward economies) that the labour-intensive character of the agricultural operation is being retained. These investments are of varied sorts and cover a large field, e.g., buildings, cattle, equipment and machinery. In miscellaneous investments, including agricultural paper and bonds, issued by the co-operative and state organisation, agriculture does stand to gain

a lot, but this is not the place to underline the importance and the role of the same. *Thirdly*, we also argued that the productivity and the efficiency of capital is of supreme significance to agricultural enterprises, which are getting capital-intensive now. In the *fourth* place, we appreciated that the range of efficiency and productivity is fairly large and this is capable of increase, too ; this is a fact which needs to be borne in mind when investing and applying capital to the sector of agriculture, for it means that with greater suitability of capital to investment, we could bring about greater efficiency and increased productivity of capital goods. *Fifthly*, we found that the extent of mechanisation is now, in the present state of advanced and progressive technique, very very vast indeed. This does not mean that the application of modern machinery is unlimited as in agriculture and tillage, but this definitely means that the application of the same is now getting more and more extended. It is more due to the standardisation of mechanised appliances and to the changed character of the agricultural system; though this transition in agriculture has been fairly marked, especially in recent years. *Sixthly* we appreciated the dynamic and the perspective view of the extent and limits of mechanisation of agriculture. The dynamic aspects were viewed in the light of economic progress ; the impact of the same on the sphere of mechanisation via technique was found to be of intimate relevance to productivity in agriculture. We concluded that the dynamism of mechanised agriculture resulted in the increase of production in agricultural enterprises. *Seventhly*, and lastly, we understood that from the perspective of mechanical appliances as in the sphere of agriculture was not limited ; the prospects of mechanical application were viewed with optimism. Mechanisation is spreading and also pervading agricultural systems of embryonic economies and the backward national systems. The conclusion, that we reached in this respect, is that the application of capital to the agricultural systems is both beneficial and of advantage to the ruralites, if applied with increased caution.

Capital, Equipment and Machines. We round off this chapter with an assessment of the respective roles that these various forms of capital play in the realm of agriculture and its subsidiary enterprises. We have reasons to believe that out of all these the place that machinery occupies is of increasing significance. This is truer of the modernised economies of the west than elsewhere, where the agricultural economies are still in the embryonic stage of evolution and are torn by the evils of fragmentation and subdivision of holdings and are very

uneconomic. Still, the point of view of agricultural experts appears to be that capital has still to be assigned its role in the system of agriculture. Though the subject would appear to be out of place if discussed here, we must concede that the popularisation of agricultural paper (parallel to the commercial and industrial investments) would greatly add and facilitate the progress of agriculture, and greatly stimulate its productivity, too. But this is a subject that we shall propose to discuss in the chapter, captioned, 'Agricultural Finance'. Suffice it here to maintain that the possibilities of agricultural paper are not yet fully explored, even in the 'mature' economies, not to speak of the embryonic and backward ones. In the matter of mechanisation the fullest advantages would be reaped only when co-operative form of organisation in the ownership of machinery is coupled with a co-operative organisation in the system of farming and tillage. That would not only reduce the costs of mechanisation, the maintenance and servicing of the same, but also derive the maximum advantages from farm machines. Though not explicit, yet this point has been hinted to off and on. In the matter of farm equipment, we may say that excepting highly specialised farms, it should be as ubiquitous and unspecialised as possible. And it may be parenthetically said that the recent fashion in mechanical appliances is towards their capability to perform as many tasks as possible, that is, even highly specialised form of equipment is fast becoming non-specialised. And bearing this in mind we propose to discuss, in the next chapter, how best to combine the various factors and agents of production with a view to getting the best out of total investment made in the form of land, capital and labour.

CHAPTER XX

APPORTIONING PRODUCTIVE FACTORS

Capacity and Efficiency: Capacity, Efficiency and Production: Variations of Productivity: Grades and Efficiency: Productive Differences: Net Productive Returns: Productive Combinations. Choice of Factors-Specific Factors: Availability and Substitutability: Cost Comparisons: Optimum Combinations: Types of Factors. The Law of Variable Proportions-Laws of Increasing and Diminishing Returns: Intensity of Culture: Largest Net Return Per Unit: Labour and Equipment: Variable Proportions and Substitution. Farming Costs-Farms and Kinds: Utility of Cost Data: Costs and Sales: Costs and Economic Change: Fixed and Charitable Costs: Marginal and Average Costs: Combined Costs, Costs and Output. Practical Implications-Economic *Versus* Technical Efficiency-Economic Utilisations. Use Rates of Input Factors. Proportioning the Factors-Goods and Farmers: The Factor of Emulation: Complexity of the System: Land, Labour, Capital and Management. Summary and Conclusions -The Linkage.

The subject matter of this chapter is of importance from the analytical viewpoint. The combination of factors of production is of relevance to the producer and the economist alike. In general production, usually, the factors of production are not so scarce as in Agriculture, which is characterised by the limitation, quantitatively and qualitatively, of land, its most important productive factor. Agricultural production could not advance without the proper combining of the factors of production. In this respect, the farmer has two distinct functions: as an entrepreneur, chalking out the policy to be followed, and as an organiser-cum-manager on the farm. His aim is to secure the *optimum* combination of the productive agents. By "optimum combination" is meant, the maximum (net) output for the minimum (net) input on his farm as a whole; the net investment is to yield the highest productive results. In the event of the optimum combination being realised; the farmer-entrepreneur can reap the best rewards out of his productive efforts. In this chapter is discussed the problem from the angle of achieving maximum production with the least cost. Starting with distinctions as between various concepts, the argument switches on to analyse factors responsible for productivity. This is followed by a study of the Law of Variable Proportions, and an analysis of the factors responsible for the choice of the productive factors. Farming costs, in their impact on the productive organisation also with their practical implications are also scrutinised. In the light of these practical and theoretical considerations, are listed the main conclusions in the last section of this chapter.

Capacity and Efficiency Before stating the laws governing the combination of productive factors it should be pointed out that these factors vary in their capacity and efficiency, and therefore, in productivity, too. It is because of these differences that the productive combinations have to be different. Still, the three factors of production are alike at least in one economic characteristic in their differing economic productivities. Even the different units of the same productive factor may have different productive capacities.

Capacity Efficiency and Production Different productive factors differ in their capacity of work. *Capacity* refers to the input of productive factors, it does not refer to output. Land, for instance, varies greatly in its capacity to absorb units of labour and capital with which to produce optimum results. Certain pieces of land may be able to absorb larger quantities of labour and capital; their capacity is high and they can produce larger output, their productivity is also high. Similarly, variations also exist among labourers, with regard to the amounts of land and capital they could operate. Also, certain forms of capital may require more labour power to motivate it. Not necessarily does high capacity result in high productivity, for the capacity of a factor is only its power to absorb or associate with other factors, and it need not be inferred that it would be more productive than others of a lower capacity, as their efficiency may be high. *Efficiency* is the ratio between input and output; it is measured in terms of the value of the product per unit of other factors, when combined in an optimum manner. Two pieces of land may differ in their yields, when fed on identically the same fertilisers and farmed in the same manner; this means that one piece of land is more fertile or more "efficient" than the other. Similarly, a labourer may be able to produce more than another, with the same equipment and in the same circumstances, proving thereby that he is more "efficient" than his counterpart. It is easy to understand that the relation between capacity, efficiency and productivity is intimate: productivity is the resultant of capacity and efficiency of a certain factor of production. *Capacity* relates to *input*, *efficiency* to *unit output* and *productivity* to *total output*. If the capacity of a certain productive factor is high, its efficiency being the same as of other factors, then productivity is high. Similarly, if its efficiency be higher than that of another, even though its capacity be the same, its productivity would be correspondingly higher. Physical productivity is often measured in terms of physical quantum, when the factor is immobile, while it is measured in terms of price if it is mobile. In the former case

differences and locations are to be accounted for; hence this basis is suggested.

Variations in Productivity. In this connection, attention need be invited to variations in productivity. It is possible that a man with high efficiency may have low productivity, while a man with high capacity, but because of his low efficiency, has low productivity. Differences in efficiency and capacity lead to the differences in productivity. These differences are reflected in differences of productivity. From the standpoint of good management and heightened productivity, it is proper that the higher grades and higher efficiency factors are combined with those of the higher capacity : thus maximisation of productivity is attained. This means that factors which possess high capacity should be combined with those of high efficiency. And variations in productivity arise out of variations in the capacity and the efficiency of the various agents of production. Common observation has it that the best farm land is owned by the best farmers. Variations in the efficiency of different pieces of land often arise out of differences in the amount of physical product per unit of labour and capital invested. Generally, efficient farmers till efficient lands. In fact, all operators differ in the productivity of their efforts. Differences in human capacity and efficiency account for variations in the productivity of agricultural enterprises, and hence cultivation.

Grades and Efficiency. Consideration should be given to gradation of land, labour and capital, as determining efficiency and productivity of the enterprise. This gradation accords to different purposes. Competition among farming types has allotted different grades to different operators and entrepreneurs. Choice is made in terms of one's ability and efficiency. A farmer of higher grade combining with other similar factors raises output, but not when he operates upon grades of lower quality. In the agricultural sphere, remarkable gradation in land, labour, and enterprise persists. If land be of low capacity and efficiency, more of it is used in order that its productivity may attain the same level as other farms. Similarly right combination of efficiency grades affects total productivity, which is highly raised by a combination comprising the most efficient factors in the enterprise. Productive social economy, thus calls for a combination of the most efficient grades of productive factors. In this connection it may be noticed that efficiency is relatively fixed and not much alterable, while capacity could be increased. Especially so in the case of land which could not be made more *efficient*, its efficiency being natural, but its *capacity* could be increased by means of better

fertilizers, etc. And it is land that is the most important factor of agricultural production. In the case of labour, efficiency as well as capacity can improve but capacity is more easily increased. Capital and equipment have rather fixed efficiency and capacity, at least as far as specific goods are concerned.

Productive Differences From the above it is clear that productive differences arise out of differentials of capacity and efficiency. The most that could be done is that a grade of land should be so selected as corresponds to the degree of efficiency and capacity of the farmer, that equipment may be chosen which equals in efficiency and capacity of the other two productive factors. The farming system should take into account the productive differentials in the factors of production. In land, for example, the character of soil is an important consideration from the dual point of view of total produce and total cost. Vast productive differentials are noticeable in soils, these account for differences in productivity. In short, farming types should accord to the physical and economic environments of land. Productive differentials persist in land more than in any other factor of production. And these are born out of various soil characteristics in point of its capacity and efficiency. And then the proportion of time for which land can be worked is of equal importance in the selection of a farm and its productivity. Productive period varies with rainfall, climate or labour conditions. Another influence is location with respect to the market. Sanitary conditions may also be pertinent because good farmers may be unwilling to till the land infested with insanitation for fear of imperilling the health of their workers and themselves.

Net Productive Returns Total productive return and net productive returns may now be distinguished, this distinction is relevant to the subject of apportioning and combining factors. *Total Productive Returns* matter only visibly while from the analytical angle it is the *net productive returns* that should be taken into account. The former are the total gross returns on a farm, the total produce from a certain enterprise, or the total income. The latter are calculated with reference to costs which are deducted from the total returns. Obviously, the aim is to maximise farm productivity, but not merely total productivity. Judicious combination of productive factors goes to maximise net returns. The farmer thus reckons his costs against produce. He selects that productive combination which brings him the highest net returns though he may usually be lured by total (nominal) gross productive returns, should he be unwary.

Productive Combinations. Attention may now be focussed on *productive* combinations as on agricultural enterprises. Apparently the preference is for a combination which is highly productive rather than unproductive or less productive. Possibly, a particular apportionment of productive factors may be more fruitful than another; in this event, the maximisation of production (the net productive returns) would be more easily attainable. Advantageous it is to select more productive factors and bring about a more productive combination, discarding less productive factors and combinations. In the light of the above analysis, the formula appears to be to combine factors of equally high efficiency and capacity, for in a combination of *unequal* factors there is initially an equal application of productive resources to these factors, resulting in loss of production and its lowering. In this case, the utilisation of agricultural resources (scarce as they are) would be most unequal with the result that while some of these may be better utilised than others are, some of these are actually wasted. Similarly, more efficient factors of production should be combined with factors of equally good efficiency; this means that if the factors of disparate efficiency are combined, productive efforts are wasted away and rendered useless. From this may be inferred a formula: a *productive* combination is one which combines factors of equal efficiency and capacity. Factors of equally high efficiency and capacity should, therefore, be combined with one another. This second consideration lays stress on the need for combining factors of equally high efficiency as well as capacity. Thus alone would be brought about maximisation of the productive returns. Were the factors of low capacity to be combined with those of high grade, productive efforts would go away wasted and misutilised, too.

Choice of Factors. In this section are analysed the varied aspects of the choice of productive factors, with regard to their specific-ness. The combination of specific factors calls for different considerations. The availability or otherwise of the productive factors has to be taken into account, as being a major determinant of the costs of the respective factors and hence of their net returns. Another consideration points to the possibilities of substitution as between the factors, especially in agriculture, where land is a scarce factor of production, but is most important. This fact plays a significant part in the application of the law of Diminishing Returns; and efforts at countering it. Cost comparisons of the various factors of production point to an optimum combination of these factors and have to be reckoned.

Specific and Non specific Factors Productive factors are either *specific* or *non specific* the former could only be used for a certain purpose and have a specialised form, while the latter are usable for all odd jobs. Capital could be both, depending on its type. Specialised capital equipment, e.g. the plough, could only be used for ploughing. Non specific equipment is usually in liquid form, e.g. money, which could be invested in any form. The *use range* of specific capital goods is, therefore, very narrow, hence their combinations, rather restricted, while that of the non specific goods wide, and their combinations multiple. This need not mean that they are capable of being combined with every conceivable factor of production, as that would depend on the capacity of the other factors to be associated with them. Still the distinction revolves round the *use-range*. Another point of distinction is that the capacity of the specific factors is also rather fixed, as compared with the others, in that the latter could be converted into any type of an investment suiting production in hand. Again, the efficiency of the specific factors is also rigid, for they could be efficient in select few lines of production, for which they are meant.

Indivisible and Divisible Factors Next classification relates to *divisible* and *indivisible* factors the former could be split and divided into parts, and adjusted to fit in with the other factors, with no wastage. They, therefore, suit combinations and make them optimum. The latter could not be so treated, and have to be applied as such, with the result that the other factors have to be adjusted to them, if they are to be fully utilised. In routine production, the divisible factors are more useful and handy than the others as they require less planning and bother and could be more easily utilised by even an ignorant peasant. Farming being an industry with more indivisible factors, the peasant has to be cautious in combining and adjusting the other divisible units of production to these ones. Most of the farming units are shrinking units, and also indivisibly united, hence the significance of this analysis.

Availability and Substitutability The availability of the factors of production is of importance from the cost point of view. With some of the factors being non-available, the efficiency of the productive system suffers not a little. In the case of expanding production, especially, the availability of the factors is of paramount significance to the farmer-entrepreneur. The law of Diminishing Returns, it may be repeated, operates mainly because of the relative scarcity of certain productive factors, this is akin to non availability at current prices. Land, which is more or less static or rigid in its

supply, is totally unavailable in increasing quantities, if production were to expand. The question of relative non-availability is important as regards other factors of production, though they are reproducible, and therefore, their supply capable of expansion. But mounting scarcity raises the cost of obtaining them (*i. e.* price) and the need for economy arises. The non-availability of land, for instance, influences the apportionment of the factors in farming due to the need for economising it : this is distinctively characteristic of agriculture as land is most indispensable for production. The relative scarcity of other factors also makes the law of Diminishing Returns operative, but that trend could be overcome if factors were inter-substitutable; because acute shortage of one particular factor would be eased. Non-substitution could be perfect or complete, for if that were so, the question of using more than one factor would never arise, as only one factor could continue to be exploited to the exclusion of all the others. As the facts of non-availability and scarcity become more pronounced, the efforts of the entrepreneurs are increasingly directed towards exploring the possibilities of substituting that particular factor by other factors, so that production does not suffer. To what extent the factors of production are substitutable for one another, determines the possibility of setting at nought the law of Diminishing Returns, especially in agriculture.

Cost Comparisons. Attention needs to be diverted to the question of costs. In arriving at a combination, the farmer tries to choose the lowest one cost. Comparing the alternatives, the farmer-entrepreneur aims at minimising the costs of production. The constituents of production costs would be studied in detail in a separate chapter below, suffice it to point out here that he would try to cut down his costs. This is not an easy task either, for he may not have many alternatives from which to choose. Also the cost comparisons may be difficult for the peasant to make in an accurate fashion. In fact, there may already be a fixed and rigid combination of productive factors, which may render any such comparison useless and unwarranted. And in a dynamic economy, cost comparisons may be unreal and hypothetical. But the main difficulty arises, when incorrect forecasts in respect of the productivity of various combinations are made, or at least wrong *expectations* framed. Individual needs of different farms differ, with the result that the experience gained at one farm may not be indicative of the policy to be followed at another in view of the peculiar problems there, and especially because of the complexity of farming costs. Cost comparisons, though helpful in deciding upon the combination to be adopted, seldom

attain precision in view of difficulties as above. Still it may roughly be possible to make them at least at one single farm as the tiller knows by experience on the same farm to what extent a certain combination is more or less productive (or costly) than another one. And in the light of these calculations, would he adopt that one which is the best from cost-production view point.

The Optimum Combination. Cost is not the only important consideration in selecting the factors: the combination should be optimum. An optimum combination is one which could secure the fullest exploitation of the factors of production as also contribute the most to the productive act. It may be rather difficult to decide upon (the best and) the optimum. This optimum combination still one could roughly point out as the goal of: the optimum differs from one farm to another, it varies with the capacity of the farmers as also with their efficiency. In the case of more capable farmers, an optimum combination is constituted of the largest total of high quality productive factors while with lower grade farmers it would swing to low quality factors. Not this alone. The size of the producing unit also influences a farmer in adopting a particular combination in preference to another. This rule is not universal, for size need not be the only determinant of the optimum: a large size may not be associated with better type of factors. Stress may be laid on the argument that an optimum combination results in maximising production, nearly in all circumstances. Inevitably this is tantamount to combining factors in such a fashion that those of equal grades associate together. This is how in practice an optimum combination may be attained. The choice of productive factors in an optimum combination also depends on a correct selection of grades of productivity of same equivalence being secured. Attention need be drawn to the inter-substitutability of these productive factors especially when the question of economy faces us. A correct selection may favour non-specific factors which are less costly but have a wider use range. Secondly, a least cost combination may also be preferred to another one for very obvious reasons.

Types of Factors. To sum up ultimate choice depends on what types of factors are usable and available to the farmer. These may be specific or non specific, reproducible or irreproducible and abundant or scarce factors. These distinctions have to be borne in mind when making a choice of factors for the optimum depends on the correctness of this choice. This is the first stage in the combination of factors for if a certain combination does not suit an enterprise the results may be disastrous, hence the argument. The point is that the specific factors are usually less suitable for agricultural enterprises.

Divisibility adds to economy and adaptability, while it also makes for flexibility in the unit of production. Scarcity rather than abundance characterises agricultural factors, hence the need for economy. And lastly, the irreproducible factor, namely, land plays a very predominant role in agricultural enterprises; this raises the above noted complications. In short the combination of factors, to be optimum, must be one which is comprised of the right type of constituents correctly.

The Law of Variable Proportions. This section discusses a law which provides the basis for all combinations and apportionings of productive factors, in all industry especially agriculture. In the production of an agricultural commodity, combinations need not be in definite or rigid proportions. On the other hand, factors are always combined in *variable* proportions as determined by labour and capital which could be most efficiently associated with land. At a given time and for a given price, the factors of production could be combined in a certain proportion, most advantageously and most productively and this combination will have to be altered with another set of prices and in different circumstances. Hence proportion of factors of production varies from one period to another and from one price to another. This law elaborates the fact of *variable proportions* as applied in the agricultural sector. The proportion of factors also differs with different farm types, for reasons, biological, locational, and physical. The law, therefore, deals with aspects of *optimum combination*. The intensity of agricultural cultivation, as admitting of an optimum combination is discussed simply to elucidate certain points. A detailed reference is made below to the largest net return per unit of input in agriculture, and finally an account is given of the *substitution effect* in production.

The Laws of Returns. Reference should now be made to the laws of returns in their bearing on the subject. There are three laws of returns; of increasing returns, of constant returns and of diminishing returns (the one discussed earlier in this chapter). Their operation is brought about as increasing amounts of labour and equipment are associated with a certain amount of land, which, in all agricultural operations remains a comparatively fixed factor of production. If a larger amount of produce is obtained, the law of increasing returns is said to operate. If the amount produced remains proportionately constant, the law of constant returns operates. And the law of diminishing returns has already been studied. In other words, the law of increasing returns operates, when man is able to control productive effort and guide it to the desired

end, for his goal is to maximise production and profits. On the other hand, the law of diminishing returns is operative, when Nature is predominant in production. Therefore, the law of constant returns operates, when Man and Nature balance. Further thought reveals that Increasing Returns means *Diminishing Costs*, while Diminishing Returns means *Increasing Costs*. The laws of returns establish a relation between inputs and outputs, in terms of costs. Detailed examination brings out the fact that the law of increasing returns or diminishing costs is operative when the fullest utilisation of the indivisible factors is made, by adopting such a combination as is the optimum one. Secondly, the law is the resultant of a more perfect substitutability of these factors. It may be recalled that the law of diminishing returns operates, when the a particular factor of production gets scarce and/or is unavailable to the producer with the result that the optimum is disturbed and the diminishing returns or increasing costs follow. Were this optimum combination not disturbed, the law of increasing returns would not apply as optimum productivity would be maintained. The law of increasing returns would be operative when there is the fullest exploitation of the indivisible factors, and better inter-substitutability of them. Still, due to the inevitable scarcity of land, indispensable to agricultural production, this does not take place, as land is unsubstitutable. Also the optimum unit is incapable of being maintained at the optimum level, as the economy is dynamic, while the producing unit is not adjustable. The law of constant returns operates in most of the process in industries, where increased investment results in proportionate increment in production. raw material is supplied under diminishing returns while processing under increasing returns, hence they neutralise.

Intensity of Culture In the study of apportioning factors of production, it is an important problem and also a central one. The primary consideration is that land is indispensable in agriculture, and also limited in quantity, hence great economy is exercised in its utilisation, for hardly is a substitute available for it. Changes in the relative abundance of the productive factors are reflected in the relative costs to the farmers but arise out of the differences in the rates of increase of the supply of factors. Again, land supply increases much less than that of others. Even reclamation of land is slower to increase its supply. This is how the question of intensity of cultivation becomes of paramount importance. The history of colonisation provides us with instances as point to an expansion of land more than the multiplication of the settlers, but only in the initial stages, there the question of economising

all arise. But in the modern economies, generally, the supply of land is limited and rigid, necessitating more intense cultivation of land. This can be viewed from certain other angles. A correct ratio may be arrived at between land and labour, with reference to the crops grown; land is quantitatively given and the problem that poses is how much of other factors may be combined with it, to raise maximum produce. Also the problem may get related to time, for the crops to be grown may need different amounts of labour and capital in the short period of their cultivation. Again the demand for other factors may depend on farm organisation. Lastly, the combination of the units of labour and capital may be looked at from the larger national angle, so that the problem is also one of the correct utilisation of the factors of production.

Labour and Equipment. The question that faces the farmer is how many units of labour and capital be combined with land, with a view to maximising his production. In case of certain crops, the requirements in regard to factor utilisation may be high, but it may not be so for other crops. Varying are the demands of labour and capital with respect to various crops. The nature of the farming operation has also to be taken into account. In the initial stages, there may be increasing returns till the point of exhaustion is reached, and constant returns begin to operate, to be followed by diminishing returns. The assumption is that the units of labour and capital are composite and homogeneous. This is to determine the intensity of culture at a certain stage. Natural factors, like weather, also enter into his calculations, and the peasant has to make daily adjustments with regard to weather and its varying needs, etc. If the demand for labour from his farm rises, he has to arrange for more labour, which if unavailable, may force him to re-arrange his resources afresh. Hence only one enterprise could not be taken into account, but the whole range of farm enterprises. The farmer would tend to make such use of his resources as are likely to add most to his total income and profits, regardless of his earlier plans. If labour and capital could be adjusted indefinitely, the problem is how to increase the amount of business under a certain form of organisation, or what form of organisation to select. The problem of how to heighten his income and profits could be solved by making changes in the capacity and the efficiency of labour and capital, and his choice would depend on the relative costs of the two courses open to him. From the standpoint of the economy, there is found a wide range of the intensity of culture: certain farms are being run on an *extensive* basis, while others on an *intensive* one. On the former, more land is used in proportion to other factors, while on the latter, more application is made of other factors. On

geographical basis alone, certain farms may be farmed on intensive basis, due to the character of the soil, which may also be a deciding factor. Still substitution of factors is of great significance.

The Substitution Effect Often is there inter substitution between labour and capital. In farm work, a fixed number of labourers may suffice for a certain amount of equipment, but the type of the equipment in use is another determinant of the number of labourers. Sometimes it may not matter much whether work is done by hand or machinery, but in certain cases, the number of labourers may be increased with a view to economising on equipment. Labour could also be economised by extending the use of machinery; this is how increasing mechanisation is brought about. In certain cases, the increased use of machinery is advantageous, while in other cases, greater utilisation of labour may be more profitable. All intersubstitution is aimed at maximising productivity. It may be stressed that the least expensive method may not always be adopted, it is the most productive one that is favoured. Intersubstitution as between the factors depends on the relative demand made upon the time and energy of the farmer entrepreneur, this activity may increase when the return from the same justifies its extension. Machinery is preferred to labour in order to gain a more effective control over production and less dependence upon vocal humans, and also for work simplification. Machinery is no resistant to various controls or longer hours, nor would it desert the farm. Where substitution does not affect production the cheaper combination is selected. Under the assumption that the alternative combinations are equally productive, quantitatively and qualitatively, the selection would depend on factor costs. A change in the cost of equipment without a corresponding change in wages, would necessitate a suitable readjustment in the relative amounts employed of both. In the backward economies, it is labour that is cheaper, hence more labour is employed, while in the advanced economies, more machines.

Variable Proportions As adverted to above, the law of increasing returns operates, as long as the returns per unit of investment increase, and this happens as long as the optimum in production is not reached. At the optimum point, the trend deviates towards constant returns, and as scarcities begin to be felt or intersubstitution becomes imperfect, diminishing returns are operative. This combined trend is termed as the Law of Variable Proportions. Constant returns link the increasing and the decreasing returns, and are the intermediate stage between the two. This stage could be prolonged by the

application of different quantities of the different productive factors, as may be more productive; their proportions could be varied. The questions remain to be answered: how to find whether the produce is at the maximum, and secondly, where to stop further application of the factors to his enterprise. Some units of the productive factors must be initially invested, in order that the specific factors may be brought into production. And this process of investment may continue till the highest *average* net return per unit is realised, for that is the optimum point. This average net return per unit increases till increasing returns operate, and till the increment per unit is equal to the average. These calculations are possible when proper data regarding average returns is available, still theoretically speaking this is the basis on which the calculations are to be made. The underlying assumption is that the demand upon managerial and entrepreneurial ability remains the same, proportionately. And this is what obtains in practice, for supervision could be extended to a larger unit, though if the units of production were scattered, this may not be so. Rent of land may also be accounted for, in this case the net returns may be taken, while if no rent is paid, the gross returns are assessed. The law of Variable Proportions is applicable to net average returns, in the same fashion as to gross returns: the average net returns may also rise in the initial stages of production, remain constant and then begin falling. Usually, the average net returns per unit rise with the intensity of cultivation, which in turn often accords with the amount of rent paid, as higher the rent, the greater the intensity of culture. In the case of share rent (Batai or Metayage), this rule may not apply, for rent increases with the increase in the total produce. The share tenants may well not raise the intensity of cultivation for obvious reasons. Suffice it to say that the net productive returns and variable proportions are much interlinked in agriculture.

The Inference. From the above study it is clear that the law of Variable Proportions is the dynamic version of the laws of returns; all the laws of returns apply to the same piece of land successively. In this regard, the peasant has to think of the choice of factors and their proportions. An element of factor costs is also implied in the latter consideration or the larger issue of farm costs, to be discussed below. Still it could be said that combination of factors accords to the law of Variable Proportions, broadly speaking.

Farming Costs. The above problems are looked at by the farmer from the one angle of costs. The costs of production determine the range of production as also its intensity, and degree. Under diminishing returns, the costs increase, and so on. Costs have to be related to production and output. An

analysis of farming costs reveals that the point of highest net return seldom coincides with that of lowest unit cost. The shift from decreasing costs to increasing costs may not accord to the shift from increasing to decreasing output. Thus there is an economic lag, probably due to the marginal returns being less than the preceding ones. The intermediate marginal input of productive units add less to the total output than the immediately preceding ones, still they earn marginal returns sufficient to bring down costs. Variable and fixed costs may also be taken into account, also the average and the marginal costs. These problems are discussed below, in rather details.

Forms and Kinds Cost data may be split up further. There are the marginal and total costs. Marginal costs are the incremental costs due to the expansion of the unit of operation while the total costs are gross of output, the average being found out by dividing the total costs by the units of output. Then there are the combined (total) costs and the single input costs. the former are the gross of all costs, while the latter refer to single items as labour costs, etc. Thirdly, there are the unit costs, or the costs per unit of some input factor, land, etc. as against these are the unit output costs, in terms of output per unit. Next are the physical and the money costs. the former relate to the consumption of productive agents, while money or nominal costs are expenses of production. Fifthly, are the fixed and the variable costs, which play an important role in the combination of factors. the former remain the same even when production is expanded, while the latter vary with the production unit's size. Sixth in order are the cash costs or the non cash ones. the former are out of pocket costs, or those on which money is spent, while on the latter no direct cash outlay is made. Joint costs refer to the costs incurred jointly for the same productive process, while the supplementary costs are for the same productive agent, but at different times. And then there are the historical costs, which were incurred in the past while the current costs relate to the present. Lastly the necessary costs are indispensable to the process of production while the fairprice costs are equal to the prices necessary to support a certain standard of living.

Utility of Cost Data The cost data is used for a triple purpose. firstly for farm production, secondly in framing price policies (to be examined below in a separate chapter) and lastly as a measure of economic change. In farm production it is relevant to the combination of production factors. it would help the farmer in estimating the receipts and the expenses of alternative operating programmes and also in arriving at the optimum combinations. Also it would suggest to him the ways and means of reducing costs and (incidentally) maximising

profits. Thus the data may provide a clue to the best farm practices. It may enlighten him as to trial budgets of different combinations, enabling him to fit his programmes of production and settle details in advance. Physical and money costs may be shown separately, as also unit costs. Such data may have to be adjusted to technical changes, so that comparisons remain correct. Again, it must inform about the variable inputs. By a comparison of the marginal input with marginal receipts, the farmer is able to secure the maximum out of his enterprise. On a diversified farm, the highest profit combination is not the only consideration. By raising competitive crops, factors are also used competitively, and therefore the problem of using productive factors for the most remunerative crop poses itself. Cost data guides one to apply those factors which may be of maximum addition to one's income, from the various enterprises, and not from one single farm, or crop. It provides a clue to the selection of the productive factors to be used on a particular farming enterprise. From the cost side, the problem is to discover the types of machines and other equipment as have the lowest cost per unit of output. Cost differentials have to be analysed, physical and money costs separately recorded, and adjustments made in respect of technical and other changes. Again the cost data indicates the best combinations to be adopted. But it does not serve as a guide to recombining various enterprises, as the hypothetical cost data may not be available, nor may it be possible to calculate the supplementary and complementary costs on enterprises. At best unit costs could be compared to prices, and conclusions drawn.

Costs and Sales. Costs guide the farmer in his selling programmes. Price may be related to cost which, however, is not a determinant. Prices are the result of the interaction of supply and demand. Three types of costs may be distinguished; in this context. (It may be pointed out in parenthesis that sales give gross returns, from which net returns may be calculated). Distinguishing between the various types, one has the necessary costs that must be met to have the required supply for the market: they provide an incentive for farm production. Historical costs are the sum total of all the costs of actual inputs, ordinarily in the recent past: they are used in farm accountancy for the fixation of price. And lastly, the fair-price costs are those which the farmer must cover in order to maintain a fair standard of living. This cost is calculable by allowing the farm family a fair income to support them at a reasonable standard. If this cost is not covered for a long time, farming would be depleted of all initiative and enterprise. Usually, the price level fluctuates between the *necessary* and *fair-price* costs.

Costs and Economic Change The behaviour of costs under the stress of the economic change is interesting in the dynamic sense. In the long run, both costs and prices are intermingled and difficult to distinguish. The combined unit costs for a period of time are used in determining the best combination. Index numbers of changing costs and the related data give us information about the measure of economic change. This may guide the farmer entrepreneur in deciding upon a line of production, which may, prospectively speaking, be the most paying. Adjustments in the cost rates could be made so as to fit them in the chain of supplementary and complementary relations among enterprises. But these calculations call for the most minute and detailed accounts so that a distinctive measure of economic change in respect of the combinations of enterprises is noticeable. The use of statistics, as supplied by experimental farms, may not be of the same utility as calculated by the farmer about his own farm. Prospectively speaking, the farmer has some use for this data, not only could he arrive at a decision about combining the various enterprises, but also chalk out his course of action in the context of economic change and trends to be read off from the cost data at his disposal.

Fixed and Variable Costs Fixed costs or overheads remain the same, regardless of the variations in output, for they are investments made in the form of plant, machinery, etc. Variable costs respond to output. Fixed costs include interest charges, insurance premia, upkeep and depreciation costs, while the latter cover the costs of seeds, fertilisers, and that part of the upkeep and maintenance which varies with output, and the wages of labour. On a family farm, however, much of the labour is of the nature of fixed input. Land costs, also, are fixed, especially "the indestructible properties of the soil", while manures are variable costs. A satisfactory procedure of separating the two has yet to be evolved. Harvesting costs could be regarded as variable costs, as they vary with the harvests, while machine costs are fixed ones. This distinction is valid only in the short period, for in the long run, all costs of production have to be covered and are only variable. From the standpoint of combining productive factors, fullest use must be made of the fixed costs, and the variable costs varied accordingly. This rule could only be observed consistent with the crops grown and the enterprises undertaken. Still, to avoid waste, this rule may be broadly followed.

Marginal and Average Costs The farmer tries to secure the best out of his farm investments. Assuming that he gets all the fixed factors free, he will aim at covering the variable costs remuneratively. The concept of *average* and *marginal* costs helps

us out of the complications arising out of this problem. They refer to single input factor, and give us a clue to the provision of additional factors. Average costs give input per unit of output. As long as marginal costs are higher than average costs, inputs raise output, obviously for mathematical reasons. But when the average costs are higher than marginal costs, additional input units lower output. (Marginal costs are the incremental costs of additional output.) When the two are equal, the output is the highest and at the peak. Optimum output is that which equalises the marginal and the average costs. Equalisation is in respect of one single factor, hence the application of this analysis is limited: it is complementary to the above analysis of fixed and variable costs.

Combined Costs. The combined effect of the cost-relationships shapes combinations of productive factors. Marginal and average costs fail to explain the whole story; it is the *combined* costs that give the clue to this problem. The above analysis clarifies the role of variable costs. Average and marginal costs for fixed factors go on declining all along the expansionary process. Hence the average outputs and the average inputs for all variable factors must be taken into account; and this gives the least-cost combination. To repeat, the least-cost point is not the one for profits to maximise. Profits are the difference between the costs and the selling prices, and often vary with output. The highest profit combination is that at which the last unit of varying factors pays for itself. Complete analysis requires a consideration of all these alternatives. Marginal input adds a certain amount to profits. The farmer prefers that combination which adds most to his profits. He is always balancing the marginal profits for his different input factors as against others, and with good calculations, the marginal contribution of different inputs would always be equal, to each other. This is the point of the maximisation of the utilisation of factors. With many crops and several enterprises on hand, the farmer would seek to equalise their marginal revenues. Often this is based on his past experience. This analysis applies to family farms as the computation for labour has not been given its due place. But the least cost and the highest-profit points would change according to how much of the labour force constituted fixed or variable costs. In large-scale farms, labour is mostly a fixed charge, while the value of by-products is also to his credit.

Costs and Output. In short the general belief that high yields make for low costs is not (strictly speaking) true. In most crops, the overhead and the constant costs form a relatively larger part of total costs than do variable costs. Other

things being equal, any benefit that the farmer derives is by spreading these basic costs over as large an output as possible. His effort is to heighten output by increasing his inputs of labour and capital over and above the minimum necessary to grow crops. His ability to do so is limited by the incidence of diminishing returns. In the case of the livestock farms, the maintenance costs are to be considered, while in dairy farming and meat production, it is the maintenance costs that matter. In both livestock and crop production, the entrepreneur is not free to increase his turnover by increasing the variable input. More limited is the scope for the farmer than for the manufacturer to lower unit costs, by increasing output of any one commodity. The farmer has, therefore, to take inputs and outputs, not in terms of separate enterprises, but in terms of the farm as a whole. He has to meet certain costs irrespective of the amount of the produce. He must pay rent and maintain his implements and machines. His concern is not with profits from one single enterprise, but with contribution that each enterprise makes to the farming projects taken as a whole. The complementary enterprises help the others become more profitable but the supplementary ones (sidelines) only reduce the overhead costs. It is certain that the technical efficiency is not necessarily identical with economic efficiency. His aim is economic efficiency. This means very comprehensive index of the economic utilisation of productive factors.

Practical Implications The above analysis, though complicated is very theoretical. In this section are given the main applied conclusions. With a distinction between the economic and the technical efficiencies, a probe is made into the economic utilisation of productive factors followed by a consideration of the use rates of input factors. Next are recapitulated the various points made when discussing apportionment of factors, especially from the farmer's point of view. In this respect, the factor of emulation, an important psychological fact, is analysed, for the peasant is not a mere robot, but one with definite likes and dislikes. The complexity of the system is restressed, and finally is weighed the relative importance of the four factors, as in their combination for production in the agricultural system.

Economic vs Technical Efficiency As pointed out above, the two are not synonymous. Technical efficiency is measured in terms of the output of individual crops and livestock, i.e. per acre and per head of cattle, or in terms of the output per unit of the input, or in terms of the returns per unit of investment. Technical efficiency is the efficiency of the productive apparatus that the farmer installs, with a view to raising output per unit

of investment. Economic efficiency is the *productivity* index of various forms of investments. While technical efficiency refers to productive efficiency of individual enterprises economic efficiency gives the efficiency of the system of agricultural enterprises. Thus the latter measure is more comprehensive and this the farmer takes into account when increasing his production. In short, economic efficiency is measured in terms of the total output of the farm as a whole, expressed as a function of the *combined* costs of the total investment.

Economic Utilisation. An important consideration in the combination of factors is their economic utilisation, especially in agriculture, as land, being limited, requires other factors to be combined with it for its complete utilisation. The fact remains that as long as the full utilisation of land is not achieved, the optimum combination is not arrived at. "Economic", when used with "utilisation" signifies that it is not the technical efficiency to which reference is being made, since production is not to be looked at from the viewpoint of the present exploitation of the factors but from the broader angle. Thus *economic utilisation* indicates certain considerations: firstly, that the problem is viewed comprehensively and all enterprises are taken into account; secondly, "utilisation" implies that the productivity effect is not the only one of importance, it is the margin of profitability that matters; thirdly from the economic angle it is the proper balancing of the twin productivities, the present and the potential, (which the technician may not take into account) that is implied in this term.

Use Rates of Input Factors. These rates are calculated by dividing total output by total inputs at each point of combination. The point of highest average output comes later than that of highest marginal return, which from some of initial investments and inputs, may not be high. Use rates depend on the nature of the inputs, outputs, and the fixed factor, land. No mathematical or precise relation could be formulated, as conditions of agricultural production vary greatly. When, for instance, the fixed factor is *irrigated* land, rains may not matter much in its productivity. In livestock farming, the problem assumes a different complexion, the net output is the excess over maintenance which is an overhead charge. Under actual farming there is another overhead, the maintenance of the breeding cattle. Thus maintenance and production inputs are involved in many farm enterprises. And it is the *use input rates* that have to be reckoned with in the combination of the productive factors: this is quite different from what obtains in industry.

Proportioning Factors. Precise calculations may be ruled

out in the farming system nobody knows exactly what his effort would yield, especially the farmer, whose business mainly depends on the mercy of nature, only experience has it for the peasant. And experiments have not been made by individual farmers but organised agencies, like the state. The farmer has to decide what use to make of these conclusions. But it is by proportioning factors that he makes his business remunerative. The most practical way of arriving at correct proportions is to make alterations as long as it pays. A certain amount of uncertainty is there about the factor costs and their utility. The scarcer factors should, therefore, be used sparingly, while the more plentiful ones liberally. Practically speaking, the farmer would let certain jobs go, if they are costly, and out of his means. More labour and equipment, being more difficult to obtain the farmer, would employ his own family people even to economise in point of equipment. Unlike that the farmer is able to add more land, other factors have to be adjusted to it.

Goods and Farmers In all these calculations, attention needs to be focussed on the fact that the farmer's choice of agricultural goods is quite limited. First, land is limited, hence the farming unit is more or less rigid, it may not admit of expansion. Better quality of land may also not be at his disposal being scarce. Secondly, large quantities of labour may be unavailable. Thirdly, the individual peasant's resources in capital and equipment may be quite limited, as usually they are both liquid and specific, with the small peasant. And above all, his capacity to manage things is usually low, especially in the case of the less trained and uneducated peasant. Hence he disregards theory and goes the traditional way.

The Factor of Emulation The general structure of farming is determined by emulation. This means that even one leader could revolutionise farming. It is on this fact that the National Extension Movement rests. By mere imitation knowledge has spread from a few individuals to the whole community. A few good farmers could influence and enthuse several others. The present system of farming owes not a little to a few thinkers and inventors, and the emulative effect has been responsible for the wide spread of farming knowledge and practice. The fact remains that a better combination of factors may result from emulating other farmers.

The Complexity of the Farm System Farming would be greatly simplified if it always consisted of the growing of a single crop, or the undertaking of one single operation. But as it is, the system is rather complex, hence the combining of the factors on all the various enterprises is still more

complex, especially when this is to be simultaneously done, with limited factors at the disposal of the farmer. The problem gets more and more complicated. From another angle, the real income of the peasant does not depend on one single enterprise : this makes the problem more confusing. Hence his income depends on his efficiency in achieving the optimum combination, not only of the factors, but also of enterprises and to co-ordinate and maintain a high standard and what is more important, and more difficult, in the correct proportions and at the right times, and in right places and firms.

Land, Labour, Capital & Management. To re-assess the comparative and relative valuations of the factors of production in agriculture is instructive. Even if the farmer were to get all land, by renting or otherwise, he may still not be able to cultivate by the methods of his choosing, for he could not be sure of reaping the full advantage of the permanent improvement he makes. Seldom free or capable of studying the academic and the scientific aspects of his business, he goes the traditional way. Infrequently does he find himself attending the meetings at which farm affairs may be discussed and improvements suggested. His horizons are, therefore, very limited and narrow. Not being able to dabble in the marketing organisation nor being qualified to moot out new methods or innovations in his business or technique, he could only gain by means of emulation. Similarly, in regard to capital and equipment, the position is no better for the lack of capital haunts him. Even if he had plenty of money he does not use it in the best manner, incorrect utilization is his malady as he is ignorant of the art of spending. In managerial ability, he is at a discount, unable to man his own show efficiently, or afford a paid manager. The problem of combination, though baffling, is tough.

Summary. This chapter has explored the principles underlying combination of agricultural factors. Starting with definitions and distinctions between capacity, efficiency and productivity, the argument drew pointed attention to their role in farm combinations. Productive differential of factors, and their combinations were noticed, as also the facts of their availability and substitutability, etc. An optimum combination was defined. The law of variable proportions was examined with detailed reference to factoral combinations, intensity of cultivation, utilisation of labour and equipment and the inter-substitutability between factors. The whole problem was found to revolve around the issue of farming costs : the cost data, its utility in combinations and its role in economic change (the dynamic aspect) was studied. Further analysis

was focussed on the role of fixed and variable costs, average and marginal costs in respect of combinations. It was discovered that *combined* costs play the determining role in designing the productive patterns. Next was examined the relation of costs to output with respect to the size of the production unit. The practical implication of the principle underlying this theory were set in detail in the light of economic and technical efficiency, the former having a more comprehensive import. The problem of economic utilisation was also attacked and found to be relevant to the type and nature of combination. The use rate of input factors present another problem, followed by that of proportioning the factors between different enterprises and operations. The farmer's ability to utilise various factors of production is limited because of his ignorance; he cannot get the fullest out of these factors. Next was stressed the non-economic factor of emulation. The farmer is influenced by the example of other more capable farmers. Unable to master the technical details of agriculture, he is imitative of the *leaders* in farming. The section was rounded off by admitting that farm resources are inelastic.

Conclusion. The problem of combination of factors depends on several considerations. *Firstly*, a combination has to ensure that the various grades of different factors are equalised, if *maximum production* is to be attained, they should be of equal efficiency and capacity, otherwise the process of 'absorption' would remain defective. *Secondly*, the choice of the factors of production must be such as to ensure the optimum combination. Cost comparisons have to be made, and to indivisible factors must be adjusted others in order to effect full utilisation. *Thirdly*, the law of substitution plays an important part in this analysis, for its rule is to equalise marginal productivities, when employing factors of production and combining them. *Fourthly*, this maxim is of application not only to different factors, but also to different enterprises. *Fifthly*, the law of variable proportions is a restatement of the different laws of returns, and serves as a guide to the employment of production factors, in view of the special limitations and characteristics of agricultural enterprises. The law was also examined in the light of the intensity of culture, and the substitution effect on the farm. The next section dealt with the problem of farming costs in their bearing on factor combination, and the conclusion reached was that marginal and average costs play an important part in determining the apportionment of factors in different combinations, and these costs point to the optimum input-output ratio. *Seventhly*, the role of the fixed and variable costs was observed to point to the adjustment made, when produc-

tion was initiated ; this adjustment was favouring fixed costs, and determined by them, if the optimum in factoral combinations was to be reached. *Eighthly*, the combination of productive factors is a variant of the output aimed at, especially in agriculture, which obeys the law of Diminishing Returns. *Ninthly*, of the two efficiencies, the economic and the technical, the former is the more comprehensive of the productive efficiencies, which matter in agricultural production and have to be reckoned with by the vigilant farmer. And *lastly*, the farmer is mainly guided by his practical experience, as also by the emulation of other expert farmer-leaders ; and this is the main thing guiding him in practice, and everyday life, regardless of the theories propounded by the pundits of agricultural economics.

The Linkage. Before entering upon the discussion to be launched upon in the next chapter, it is proper to avoid confusion of thought now, at this stage. In this chapter was examined the problem of the combinations of productive factors, but this analysis would be complete only when the problem of the size of the production unit has been dealt with. It is, therefore, proposed to examine in the next chapter, the questions relating to the determination of the size of the producing unit in agriculture ; this is with a view to getting a clearer vision of the issues raised in this chapter, and also to complete the argument. Bearing the conclusions, reached in this chapter, and the principles emanating from them, it may be stressed that the issues are inter-connected, as also complicated and involved. And the one set of issues have to be weighed in the perspective of the other set. Before closing this chapter, it may be emphasized that the problems relating to the size of the unit of agricultural production vitally affect those of the combination of production factors, as different combinations would be preferred, with a change in the scale of production, which in turn depends on the size of the unit of production. Also, size of the unit of operation may influence the farmer in the very selection of the factors of production : capital and equipment may be more fruitful on a larger farm than on a tiny plot of land, and greater investments may, therefore, be made in this respect by the farmer-entrepreneur on the farm. Economists are familiar with the economies of scale. These economies may be reaped in fuller measure, when the size of the unit is larger and what implications, economic, social and agricultural, flow from each size would be the subject matter of the next chapter—an important subject.

CHAPTER XVI

THE UNIT OF PRODUCTION

Farming and Farmers —Size and Distribution Subdivision and Fragmentation The Farming Unit Determinants of the Size Density of Population Employment Opportunities Land Tenures The Operating Unit Distribution of Wealth Historical Factors The Management Factors Economics and Types Size and Scale Economics of Scale Input Measures The Investment Units Annual Cost Basis Large Scale Farming Small Scale The Optimum Units Economic Significance The Scale of Farming The Unit of Organisation Difficulties of Analysis Equipment and Machinery Right Proportions The Social Viewpoint Diffused Management The Dynamic Aspects Present Trends The Best Size Economic and Un Economic Holdings, The Unit of Dynamic Production. Summary and Conclusions

In this chapter, are discussed the problems and the determinants of the size of farms. This particular aspect of analysis, it may again be repeated here, is concerned with the combination of productive factors. This problem is also important from the point of view of success or failure of the farming system as a whole. Next consideration, relevant to the problem in hand, is the economic one, certain farms may be un economic while the others economic, and this is determined by the size of farms. Again, the problem is also significant from viewpoint of the distribution of land and wealth as among the peasants and the landlords, i.e. the distributive aspect. Bearing upon the above is the intensity of land hunger among the people. All these viewpoints are considered in this chapter. This discussion starts off with an account of the types of farmers in relation to their farms. Important and relevant questions as the fragmentation and sub division of holdings are also dealt with in this introductory section. In the next section, determinants of the size of the farms are enumerated. Various viewpoints are brought to bear upon the problem, which is analysed from populational, employment and distributive angles. In the next section, are analysed the problem of the scale of farming, detailed examination is made of investment and input factors, and the different factors in farming scales are assessed. In the light of this discussion, the concept of the optimum unit of cultivation (or operation) is developed, in terms of economic factors. The unit of farm production is adjudged from the organisational standpoint. Dynamic aspects have not been forgotten for the chapter closes with an examination of these, in this last section is traced the transition from the present day problems to the probable

prospective positions with an eye on the trends in farming systems. What the unit of the production from the dynamic point of view would be is the moot topic.

Farm and Farmers. A discussion of the general pattern of the producing units raises the first problem, in the order of priority, that of the size of holdings and their distribution among the farmers. A distinction needs to be made as between holdings and farms, though these terms are being used interchangeably. This farm is a bigger unit of cultivation. This chapter refers to the size of the holding, *i.e.*, the size of the producing unit and not of the farm. The holdings may be agricultural, or non-agricultural; this analysis need not notice the latter. Reference has, therefore, to be made to the types of farms and farmers, for holdings are with respect to the types of agriculture. In the first instance, there are *full-time* farmers who include such entrepreneurs as horticulturists and poultry-farmers, fully engaged in farming and dependent upon their holdings; obviously, the size of the holdings means everything to them. Second, there are *part-time* farmers who have some other employment in addition to farming, such as trading or contract-work; still farming is their main business and, for them, the size of the holdings is of great concern. Third category is the regular *spare-time* farmers for whom the farming pursuit is leisurely; and the size of the holding does not matter so much, for they do this work to supplement their income, *casual* farmers are in the fourth category; these farmers do not pursue agriculture very seriously, but they do need employed managers to carry on the business; they are absentee landholders. Fifth are *hobby* farmers who are not concerned with farming seriously, but regard it as a pastime; these people may be owners of small farms, for pursuing their hobby: and are unconcerned with the size of holdings. Next category may be that of the *family* farmers, for whom, the profit motive is not supreme, but the subsistence motive is: it is, therefore, that these farmers are affected by the size of their holdings, which should be "economical". And lastly, we have the *miscellaneous* farmers with experimental farms, attached to education and research institutes; the accommodation types and such other types. From this classification a distinction needs to be drawn as between farmers who pursue their business with a view to making profit and those for whom it is non-commercial, the pleasure motive dominating their farming. Evidently, analysis deals with the former.

Size and Distribution. In considering the size and distribution of holdings, an important fact is that, usually the official records keep only an account of cultivated lands and not

pastures, forests and grass lands, which strictly speaking, should be included in a survey of holdings. Theoretically speaking, these holdings must also be reckoned. The investigator must also bear in mind the number and the area under small and large holdings, that also needs to be taken into account in order to know into what size groups a country is divided, before one could assess properly its significance. Thus the focus should be shifted from the numbers of the farmers and their holdings to arable land acreage, this provides an insight into the distribution of the agricultural land. From a study of statistics of holding in an economy, it would be obvious that the concept of average holding is meaningless, especially if the average is obtained by dividing the total acreage by the number of farmers, or even by the number of their holdings. Such an average would convey a wrong impression in an economy where all types of holdings are found. As Dr Marshall stressed, the concept of a *representative holding* may be of some value in this analysis. A *representative holding* would be *representative* of the farms which supply the bulk of agricultural produce. It may be stated that while this concept is not so meaningful in other sectors (because most other enterprises are being run by a small number of big business), it is useful in agriculture which has retained its competitive and broadbased structure. In assessing the position of the farming, it is essential that the units be studied from the representative point of view. Selecting a representative holding is matter of scientific sampling, in a very extended sense of the word.

Subdivision and Fragmentation Subdivision tends to reduce the size while fragmentation scatters them away, and destroys their compactness. Subdivision and fragmentation arise out of the law of inheritance with the result that the holdings grow smaller and more dispersed. Often this results in the uneconomic holdings being cultivated, which in turn, leads to lessening efficiency and productivity of the agricultural system. On the other hand, it is also claimed that the subdivision of holdings brings about wider distribution of holdings among the populace, a healthy influence but this holds true of those economies which are dominated and characterised by the large holdings, and estate farming. And in these economies, often succession is according to primogeniture, by which only the eldest son gets the holding or the estate in tact, without its being split up. Thus subdivision and fragmentation of the holdings is not good as it often leads to uneconomic agriculture, without in any way satisfying the land hunger of the farmers and the landless.

In fact, in the course of time, a stage comes when farmers give up their holdings which are not to provide them even with bare subsistence with the result that their holdings are bought by the landlords or the better-off type of farmers, thus the bigger fish eat away the smaller. This ultimately leads to an increase of tenancy and also to the multiplication of landless cultivators. And admittedly, the presence of this class in any economy is unhealthy for economic growth and development. In short, the operation of the laws of inheritance and succession resulting in the sub-division and fragmentation of holdings is undesirable.

The Farming Unit. The farming unit is the producing unit which has some significance from the economic point of view. This problem need not be confused with the one below, here is stressed only the economic significance of the producing unit, and below, is enumerated, its determinants. That farming unit is suitable which accords with the fuller utilisation of machinery and ensures its economy. Right proportions should balance a farming unit to other factors of production in order that optimum exploitation may be possible. This means that the farming and the producing units must have different types of farming operations; in dairy farming, for instance, the unit of production need not be the same as in vegetable gardening. No generalisation could be made as to the farming unit, which may vary with the agricultural operations. The unit of farming is what matters from the cultivator's point of view; he has often to adjust cultivation to its unit. The distribution of the farming unit also determines the complexion of agriculture in a country; in the case of the small cultivating units farming may assume an unprogressive character, as the possibilities of the application of mechanisation are remote in this case, while in large holdings, mechanised farming could be practised. In another respect the unit of farming is significant; the size determines the limits set in respect of borrowing money for improving farms and agriculture. Thus the unit of production is significant from several angles: from the viewpoint of farm earnings, from that of the character of farming, from that of the mechanisation of the agricultural system, and lastly from the standpoint of the organisational structure of individual farms.

Determinants of the Size. There are several circumstances which determine the size of the producing units. But mainly, these circumstances are examined under two headings; those factors which determine the prevailing size of a *representative* farm in a region, and secondly those which determine

the variations in the size of the producing units. It may, however, be difficult to suggest a proper and suitable size for the farming unit as there are many variations in this regard and several dynamic factors to be taken into account. In this section, therefore, are analysed several factors, the density of population in a certain region, the employment opportunities there, the nature of the operating unit, the distribution of wealth, the historical factors and the local determinants of the size of holdings. Since this discussion is general in character, and not of special colour, the analysis is limited to these items only.

Density of Population This is by far the most important determinant of the prevailing size of the producing unit in agriculture. Evidently, size depends on the number of people in agriculture, and the pressure of population in rural area. The larger the number engaged in agriculture, the smaller is the size of the holding, other things being equal. One of the five courses are open, when the size of holding has to be increased and number and density of population heavy. A country must *either* reduce its population, and follow an effective population policy, *or* shift them from rural to urban occupations and industrial employments, *or* choose to have more hired labour per farm, thus permitting a large number of people to be reduced to the status of the landless labourer, *or* evolve some other type of farming, by a combination of two or all of these alternatives, *or* introduce some immediate measures for the reclamation of land to add to the acreage available for arable purposes. One noticeable point is that the peasant is influenced by the density of population in a country in relation to the size of holdings. The fact stands that densely populated countries have a heavier concentration of farming units in the smaller sized groups. Generally speaking, in primitive and embryonic economies, the density of rural population is rather high with the result that the size of the holdings is reduced to uneconomic dimensions. Other factors also responsible for determining the size of unit, are dealt with below.

Employment Opportunities The next important thing is the range of employment opportunities, especially in rural areas. Farmers and rural people are rather home sick and stay at home, with the result that they do not like to avail of employment opportunities in distant urban areas to which they may have to migrate. If other employments offering higher wages and better working conditions attract a large part of farm labour, pressure of population on land may lighten and the size of the unit grow. The working force, when drawn away from agricultural enterprises to other regions, permit the farm size to grow. In fact,

urban earnings are usually higher than rural ; still one finds, especially in the backward and the primitive economies, that the farmer does not usually take advantage of wider employment opportunities in urban areas, stay-at-home because of his stay-at-home habits. And the survival rates of farm population are higher than of the urbanites. Consequently, even if migration takes place urbanwards for better employment opportunities and higher wages, the size of farms would tend to be reduced by the operation of the laws of inheritance and succession in course of time. And with the rise of urban income, a declining percentage of it is spent on food and other farm articles ; parity between urban and rural conditions is not easily attainable. And then, the increasing use of labour-saving devices and machines has also been responsible for unemployment in rural and urban areas. Lastly, the rate of migration urbanwards is hardly so effective as to reduce the pressure of population in rural areas ; hence, the size of the farm has not grown with the widening of employment opportunities in urban areas alone. Still, the multiplication of employment opportunities in urban areas may be fruitful be as economic expansion is never in isolation. And if the process of growth works in towns, it may create more employment in villages. An analysis of the character of economic forces reveals that in the first instance, there is the *pull* which enables a farmer to leave the farm ; in lean years, more people are pulled to cities, in the hope of earning good income there, and the prospects of being able to live better : as farmers they are under-employed. This flow is, therefore, mainly occasional, depending on circumstances not of a permanent nature, and this by itself could not enlarge the farm size. Then, there is the *push* which forces the surplus to seek employment in adjacent towns, especially when mechanisation takes place or when the size of the holding reduces itself to such an uneconomic character that none would benefit by clinging to it peasants prefer to become town labourers, instead. This process is rather painful, still it may increase the size of the holding, incidentally.

Land Tenures. The next important determinant is land tenures, as they influence the size by regulating the "right to the use of land" as among the tenants, labourers, croppers, peasants and landlords. If all peasants retired in favour of more efficient farmers, the size of the holdings may increase considerably as more land is transferred to them. Probable it is, that agricultural output and national income may as well be increased but this is a doubtful advantage as against precipitating unemployment and its social evils. In general, *rented* farms are much larger than *owned* and *share* farms. The farms, that are culti-

vated by tenants, are usually large. And as tenancy increases, so also may the size of holdings, though judged from another point of view, the increase of tenancy is not desirable. Usually peasant proprietorships tend to shrink in their evolutionary form. But more of this later. Noticeable is the fact that holdings when cultivated by peasant proprietors are usually smaller, while those cultivated by hired labour, but owned by the landlords, may be big, and hence economic in their character. It may be stated that land tenures are changing, so their effect on size of holding is dynamic, in consequence.

Operating Units Operating units are distinguished from agricultural farm. In agriculture, the operating unit is usually one actually under the plough, and often the unit of cultivation for the family. This implies that this unit of cultivation may vary from family to family if it is to conform to the best standards of cultivation. The prevailing size may be determined by the size of the family. But this need not hold universally true, because the family is only able to determine the size of producing unit when they could afford to buy a larger farm, as they expand. Still, one thing seems clear, the landlord's estate, too, tends to be split up to conform to the size of the operating unit, if the operating unit is large, the holding may also be large enough for the operating unit. But if farm operators are few, the producing units may also be small, even if it were originally a big estate owned by a big landlord. This is what generally happens. But it is possible that there may be exception to this for with greater mechanisation, the same small number of operators could till a large estate. Hired labour is usually more costly than the labour supplied by the family. Institutional arrangements, undoubtedly, play a significant role in the determination of the operating unit, and they are to be taken into account, too. But if the farm reaches such a stage of evolution that it must engage more hired labourers, there would be a change in its size, so as to bring about a fuller exploitation of the operating unit. An important fact in determining size of the farm, in this connection is the extent to which the farmer is able to afford the *out-of-pocket* expenses of a cultivation programme that he undertakes.

Distribution of Wealth It is sometimes said that the lack of capital is the main determinant of the size of producing unit. True, that a larger majority of the farmers would cultivate a bigger unit if they had the resources and capital to be able to buy more land or add to the plots. If they had credit or borrowings to supplement their own resources they could enlarge their holdings. But another point is the capacity and

the efficiency of the farmers to operate upon large farms. And if they lack these they would lose by expanding their business or enlarging its size. And it could also be said that most farm families do not have accumulated sufficient resources to do so, as in the past they did not use their resources, capacity and efficiency in the best possible way. This is a cynical view for the farmers usually work harder in the face of falling prices. It is, therefore, the distribution of the national dividend that determines even remotely and indirectly, the size of producing unit. But one thing to be reckoned is the enhanced demand for land when all farmers prefer to enlarge their unit of production : land prices may become prohibitive for an ordinary farmer, so that ultimately very few farmers may succeed in their efforts to enlarge their cultivating units. Reasons for the persistence of the small unit of farming are keen competition and rising land prices so that farmers find it hard to enlarge holdings. Even with high capacity and efficiency they may not be able to bid high for lands they want, because of prohibitive prices. Credit could take the place of cash but it is not facile especially in farming. The small farmers, who actually need it, do not have any good security to offer for the same. They are in a vicious circle ; their earnings and profit margins are low as their farms are small and their farms remain small because they are not able to buy more land. And they are unable to borrow for obvious reasons. Thus in the ultimate analysis, the size of the farming unit is determined by the distribution of wealth and national income.

Historical Factors Day-to-day. Mostly, the sizes of farms are not adjusted to the day-to-day situations due to historical and evolutionary reasons ; they lag behind economic forces in all spheres of economic activity, agriculture being no exception. In this field, in particular, the result is that the size of the farm which may have been large enough in the past shrinks considerably as several historical factors become operative in the course of economic development. If the economic units are created they could not retain their size. Several other forces, e.g. the development of industry may play their part in bringing about shrinkage of farms. Similarly, the growth of the new towns and the expansion of the existing ones may also influence farm dimensions in one direction or another. Landlords may be reduced to the status of peasant-owners, while peasants may become tenants and the tenants mere serfs. And all this transformation is brought about because of agricultural and economic fluctuations. Other factors and forces may also operate in a similar direction or in an opposite one. It is possible, that the march of time gives a different turn to

these forces. This point need not be laboured, still this dynamic factor determines the size of the producing unit in the course of time.

The Management Factor. Indirectly, but significantly enough the factor of management also influences the size of the farming unit. The fashion in the economic organisation is the delegation of management. In the estates, which are large enough, this divorce of functions may take place only because it can be afforded and is profitable, too. A smaller peasant could not go ahead with such a venture; he may not be able to afford the delegation of the management function to somebody more qualified and experienced than himself. And diversified farms, as pointed out elsewhere, are highly complicated organisations, with the result that the farmer-entrepreneur-labourer may not even venture forth to expand his business, for if he did, it may be beyond his capacity and efficiency to manage it successfully. Even if he plans to engage a hired manager, there must be complete understanding and good grasp of his business, before it could be entrusted to him. Still, the factor of management is not a restrictive influence in this direction, even though the farm may be treated as a *department* where the management functions have to be reintegrated by a hired manager. Usually, it is other restrictions limiting the size of the farm. And then, admittedly management need not operate towards expanding the farms or enlarging their size. To this must also be added the capacity of machinery and power appliances, installed on a farm. The size, for which the installations have been made is another restrictive influence, for it is difficult to expand, proportionately, the mechanical equipment and the power resources. Farms may be too small to use one type of tractor, and too large to use a smaller one, and there may not be a type which suits the size of the farm. Closely related to this is the capacity of the crew workers, it may be difficult to find more workers. Farmers may like to be as much self-sufficient as possible, for experience is that dependence upon outside resources in point of labour and power may be slippery and also cause harm to them. It may, however, be pointed out these difficulties are being overcome now.

Economies and Types. The last set of forces and factors which determine the size of the farms, relates to economies of scale and farming types, to which the size must conform in order to be productively optimum. In this connection, it may be pointed out that scale is the best which is the best utilized in the production undertaken, and hence best suited. Still, there are some economies of scale, that could only be realised if the unit is fitted with the capacity of labour and the

equipment on the farm. This is the guiding principle in this matter. More important are the gains as secured from specialisation in labour and management, and the improved methods of production ; and the larger producing units are likely to reap all these advantages. Still, equating the unit of management to efficiency and capacity of the factors of production on the farm may also be possible on the small farms : probably that is why the large scale is not so widely prevalent in farming, as in industry. Varied are the types of farming. Certain products may lend themselves more easily to the adoption of the standardised methods of production, or to a fuller utilisation of the bigger equipment. In the case of diversified farming, for example, the problem may be one of the nature of cropping and other agricultural ventures, being adjusted to the size of the farming unit, and *vice-versa*. This point needs to be appreciated in its proper perspective and no generalisations hurriedly made. The determinants of the farm size, it must be clearly understood, are many and several are the forces, operating in different directions with varying pulls. In short, the more important factors may be listed, such as the employment opportunities, the distribution of wealth, and, above all, the historical-traditional mores.

Size and Scale. The size and scale of farming has some significance, not only for individual enterprise put also for the national economy as a whole. Starting with some preliminary consideration into the economics of scale, the section underlines the role that input factors play in farming, with special reference to the subject in hand. But this discussion would be complete only if it is with reference to *investment units, which also determine the range of benefit* that the producing unit may derive from the scale of enterprise. Then would be examined its annual costs for accountancy purposes, as providing a basis to assess their relative benefits. Next are analysed the pros and cons of the large scale v. the small scale farming. The optimum scale of farming, (what it should be and how it should be determined) follows in its economic significance. This discussion round off with an analysis of the scale of farming.

Economics of Scale. Most farmers are satisfied with the size of the farm they have been operating for they get adjusted to it. But the economic factors relevant to the scale of farming have to be understood. One must be aware when farm work can be done faster. This may be because of labour-saving machinery increasingly employed on farms. Farms are, therefore, likely to grow large due to the better availability of

equipment. Another point relates to the amount of help available to the farmer. The social changes since the last century have been remarkable in economic aspects. The composition of farm population has been both a cause of the size of the farms, as also its result, for some changes have been brought about by the different sizes of farms. This economic view may be summed up by saying that a large size makes greater demands upon equipment, and may not be after all a self-sufficient one, while if it is the small scale, the pertinent problem is related to the intensity of the labour use there. Some economic aspects have been underlined. Still, it remains to be added that farm size may not accord with the economic aspects, *being too large to be manageable and to be of the fullest use*. Another possibility is that the size may be too small to be economical. Usually are discussed its two different aspects, the large and the small scale, the two extremes, although there may be several intermediate sizes, such as the *middle sized farms* or the tiny plots, etc.

Input Measures Next are discussed the input measures for without their assessment it may be futile to go deeper into analytical aspect. The size is usually defined in acres and other such prevalent measures of area in the region under consideration. But such a measure is not without defects. Farms, like factories, have a high turnover of feed and labour and other variables, and may be unduly large as against others. *What is actually needed is an over all measure of the factors of production that enter into output*, which, it may be observed in parenthesis, is the resultant of capacity and efficiency. On the ordinary cultivation farms, several input measures may be combined. Poultry farms may be measured in terms of the number of layers while different types of the cattle farms in terms of productive animal units. And the output of the tilling types may be designated into crop and produce bushels. Similarly, man-labour may also be used as an input measure, and the scale in terms of productive man work units, also alternatively spoken of as its labour requirements.

The Investment Units In investments an acceptable measure is available. This takes stock of the total investment, on a farm. This would include the value of all the buildings, the livestock, the machines, and the equipment all evaluated in terms of money or reduced to capital. In other words, it is the same as farm capital. It may be pointed out that this is a better measure of value than gross product for reasons of clarity. If we were to take the gross product there may be difficulties arising out of crop failures and other disasters, while this measure is more or less stable. Also, it may give us an

idea of the correct farm size, for in certain small-scale farms, there may be over-investment which may mean that the size of the farms may look to be large if assessed in this measure. Thus the large-scale farms, if under-invested, may appear small scale. All calculations of the scale may be upset, if the investment measure alone were used for comparative purposes.

Annual Cost Basis. This is an improvement on the above-mentioned basis. It is considered as an overall measure, though complicated and requiring accurate application. Land is included on the basis of the interest *plus* depreciation and upkeep; this may provide us with a basis for gauging the scale of the farming enterprise, for the usual concept of the scale is with reference to landholding. The other basis, rough measure, is the *annual cash rental* of the farm. Farm machinery, likewise, may be calculated on the basis of the interest and the depreciation *plus* the upkeep. This measure correlates most closely with the annual inputs: it reckons total investment or working capital, is easier to calculate, and probably the best. Even the annual inputs do not allow for an element of management costs for different types of factors in respect of their different inputs. One word more. It should be evident that all the above suggested measures are used for making comparisons among farms at the same price levels, because in the case of different price levels, the same measure could not be used: comparisons would be wrong, unless over a period of time, when correction has to be made for the changing prices by index numbers.

Large-scale Farming. For reasons of expediency, only the two extremes, the large scale and the small scale, should be discussed. The merits of the large scale in the agricultural sphere are similar to those obtaining in the realm of industry. There arise the commercial, financial, as well as technical and managerial benefits. The large-scale farmer has superior bargaining power. This is not a mean advantage, for he has often to buy and sell produce and other supplies in bulk. His superior bargaining power puts him at an advantage in the matter of obtaining credit. From the merchant's point of view, it is more convenient to buy and sell quantities in bulk and for this reason he does value his custom with the large-scale farmer. Thus there are savings in the matter of transport, handling, packing and book-keeping, which may be of a large and significant character. With larger quantities of produce, the farmer is able to initiate its grading which is useful in respect of marketing. Again, the farmer could also secure economies of scale in the financial sphere, and borrow larger sums of money at cheaper rates and more easily. This means that he could avail of the best opportunity of buying his goods at the

cheapest rates, with his easier financial resources, flowing from a better utilisation and fuller exploitation of the machinery and the supplies, used in the process of production. As the size of the farming enterprise enlarges, the ratio of investment (of sunk capital) to total costs lowers. Thus capital could be invested liberally in farm buildings, fences, roads and ditches which may be so necessary for more efficient farming. And then the land area occupied by immobile equipment may not remain so large as to discourage the farmer from investing his land in these capital ventures. Thus the fixed overhead expenses are reduced to a low percentage in the sphere of agriculture. The large scale farmer could also afford to instal better and more expensive machinery on his farm and employ experts. Also the mere fact of the large scale invests him with larger profit, even if rate per unit of output were low. He could, therefore, adopt such systems of farming as may yield a low return per unit of output. Profitable opportunities are increasingly available on larger farms. He could make certain "experiments", which the small scale farmer could not afford to do. But the most significant advantage which the larger scale farmer enjoys over the smaller farmer is that more opportunities exist on larger farms in respect of better exploitation of productive factors and expert skill. Division of labour could be introduced with good results. Most of these advantages (above-mentioned) however, are of a potential nature and are often neutralised by the disadvantages incidental to large scale of farming. In the first instance are the limitations of the division of labour on the farming enterprises. (To these reference was made above in chapters on labour and operation). The hazards, the inclemencies and the uncertainties of nature prevent a wider application of the division of labour except with grave results. All his calculations may be upset. In agriculture limited possibilities and potentialities exist in respect of the employment and utilisation of power and equipment, expensive machines may not find full time employment either. Diversified farming is another handicap. Also enlarging the scale of the farming enterprise, tends towards extensive farming, which means increasing the role of land as contrasted with that of capital. This may neutralise certain advantages of the scale. There may not be contiguous plots of arable land. Again the biological nature of farm enterprise is another handicap, only remote control is exercised over plants and animals and many unpredictable and on-the-spot decisions have to be taken. This is not possible on the large scale farm. And finally, large scale farms may have little continuity. There is the persistence of family farming, a large estate is most likely to get split up, this lack of continuity is not conducive to the healthy growth of stable

farming in accord with long-range programmes and planning. In short, the large-scale has both advantages and disadvantages.

Small-scale Farms. Small-scale farm is the usual type in agricultural countries; in fact, even the large estates get split up. Reasons for the tenacity of the small scale have to be underlined. The problem is examined not only from the economic angle but also from the non-economic one, which in all agricultural calculations counts for much. The emphasis in production is on the more intimate care and personal attention and this is what distinguishes farm production from the other types of production. The quantitative intensity of the small scale of farming enterprises is a fact. The second advantage lies in the family labour being more flexible than the hired it can cope better with the small scale. Farm work could hardly be routinised, hence larger scale may be less productive than the smaller one. Therefore, it is that small scale goes with family farming, as the reliance of the family workers on this system is complete; the gain from personal and intimate attention may be more than the loss from the inability to use mechanical equipment. The rates of output, are measured in terms of crops per acre, or the yield per cattle. Thus, these rates have no relation to the scale of farming. There seems to be no reason why the scale of farming may predetermine the rates of output. Crop yields do not depend on acreage alone but on the quality of the land under cultivation, the type of the seed sown, the degree of manuring and the nature of the cultivation process. Crops and cattle respond to individual in that the yields from productive enterprises could be raised even in small scale farming. Smaller farms being more intensively cultivated than the larger ones their productivity per unit of cultivation may be higher. Also, the smaller scale is better conducive to satisfying land hunger, as units of cultivation are small, and range of distribution of land very wide. Lastly, small farming units are more efficiently operated because of the greater efficiency of the management factor and better exploitation of farm resources. But there is the seamy side of the picture, too. It may be noticed that there are certain serious commercial disadvantages. The smaller farms are not able to offer regular supplies, and in bulk; to the market, with the result that they are at the mercy of the merchant and the dealer. Thus they suffer in point of business of selling and buying. It is claimed, however, that the disadvantage could be nullified with co-operative and joint action on the part of the farmers. Growing competitiveness in farming becomes a serious handicap, which in the matter of products selling on non-competitive basis, may not operate. Thus the smaller farmer suffers from marketing

disadvantages Again it is said, that the small-scale farmers have low staying power and in the times of depression, they are the first to collapse and undergo debts The financial resources of the small farmer being limited, he is incapable of making any experiments as regards progressive practices, as his is the subsistence scale of tillage To these may be added the other points, noticed above in favour of large scale of farming Still, it may be pointed out that the small scale of farming is the first ambitious step in the social ladder Ownership must start with the small scale, to provide him with some training and experience The fact remains that the small farmer has survived all attempts to swallow him Also, the bulk of the small farmers, though concerned with production for market, do not act out of the profit motive Secondly, efforts are being made to reduce to a minimum (by state action expert advice, and co operatives) the disadvantages of small scale

The Optimum Units This analysis is mainly from the economic angle still some extraneous considerations may enter into the discussion From the economic point of view, the optimum is an aspect of the combination of productive factors, and depends on the economic equilibrium Some of the factors of production are indivisible units, with the result that the size (optimum) would be determined by the ratios in which the divisible and the indivisible factors could be fused in production The farming units should be large enough to fully exploit the factors of production, and (more particularly), the expensive ones amongst them Theoretically speaking, the units of land are highly divisible, but this is true only of the new lands, available in abundance, but not of those with established agriculture Also, the size of the producing unit is generally beyond the control of the operator, for neither could he increase it nor reduce it except by selling a part of the same to another farmer Hence, to all intents and purposes, land is a fixed and an indivisible unit Similarly is labour, and seldom does a single farmer manage the show Family labour may not fit in with the requirements of his farm Hence the optimum size could be one, large enough to provide full and whole time employment to the farm family of the farmer, or at least good living to them Capital has a large variety Some form of capital like seed are capable of minute sub division which others like machinery are not at all divisible The more expensive forms of capital and equipment are often indivisible Hence the optimum unit should give full employment to the indivisible forms of capital and equipment, otherwise the overhead costs continue to burden the enterprise Usually farmers overcome this difficulty by hiring the expensive equipment or

co-operatively owning it. For the employment of the more expensive type of machines, they find their holdings too small. The above considerations lead to some definiteness about the *minimum optimum* size which may provide whole-time employment to productive factors as also exploit all resources and investments to the fullest possible. If this be not possible from the point of view of one single farm enterprise, a number of them should be so integrated as to give the widest scope for their utilisation. Regarding the maximum optimum, one may consider the business management aspects. In the case of family farms, the upper point need not be above the capacity of the individual farmer and his family. (These farmers vary greatly in their individual managerial efficiencies.) But the possibility is that the effective size may be enlarged by means of co-operative farming. Large-scale farms could have several smaller cultivation plots.

Economic Significance. Capacities and efficiencies of different operating units have a relevance to the problem in hand. Management, as far as the farmer is concerned, is rather intangible and does not permit of measurement in any exactitude. Still, management does fit with other productive factors in order to derive the best out of the same. In the combination of productive factors, the important thing is their utilisation; this raises the question of the size and scale of farming. One thing that needs to be appreciated is that no two agricultural operations are alike or repetitive. And the other distinctive feature is that farm work requires intimate supervision by the farmer-entrepreneur. That is why the small scale has persisted. Through the economic struggle, farmers raise their efficiency, thus eliminating the misfits. While no generalisations could be made, the aim should be the attainment of the optimum size. There are variations in the optimum size which may not be same on all farms. And there are also technical hindrances to expansion of farming business. Making adjustments to this size is an issue to be looked at from the economic point of view; the small-scale unit is more significant than the larger one. It is a more prevalent size and one that gives the largest amount of employment. But the small scale differs from locality to locality and from one farmer to another. Classification from another angle may be suggested; *subsistence* farming, *family* farming, *surplus* farming and *optimum* farming. This classification tends to relate the size to the means and the earnings of the farmers. Subsistence farming gives only bare subsistence while the family farms provide employment also. Surplus farming implies some amount of profit, and optimum farming is described above and is goal in all cases.

The Scale of Farming The economic trend should be towards optimum size, which is difficult to define, and differs from locale to locale. In certain localities, the small farms stand at an advantage with respect to the supply and demand of produce, and tend to be preferred to the larger ones. Secondly, it may be that the optimum depends on the number and the quality of the labourers operating farm machinery. If less labour is available, the limits to mechanisation may be reached early and the small scale very likely prevail, while if labour position be relatively easy, the larger scale is probable. Also the character of the farm enterprise influences the scale, as in *diversified farming*. The scale is selected with reference to advantages sought out of diversification and its type. Usually, the larger farms may be able to reap greater advantages from mechanisation and specialisation than the smaller scale, but this is no general rule either. *Fourthly*, the more intensive the system of farming, the larger is likely to be the labour force recruited and the greater the quantity of the equipment employed by the farmer. On the other hand, the more intensive the farming system, the more intimate his supervision. This means that both the forces are limiting each other with the result that the size may be fixed somewhere depending on the *resultant of the supervision needs and the supervisory capacity of the farmers*. And then the greater the difference in the skill of the master and his men, the larger may be the scale. This, generally, holds in industry as well as in agriculture. If the labour force is totally unskilled he mostly concentrates on the managerial aspect, and prefers managing things to becoming a participant himself. He need not be a tiller but a director, the smaller scale may then be discarded. The larger-sized farms prevail mostly in plantations and horticulture, where conditions favouring the larger scale are to be met with.

The Unit of Organisation This section focusses attention on the unit of the farm organisation, which may not fit in with the farming but matters in all calculations. On what considerations does the unit of organisation depend? To what extent does this unit correspond with that of farm production? And how does the correspondence between the two lead to the optimum being realised on a farm? All these things have to be adjudged in their proper perspective. Here is discussed the problem of the organisational impact on the size and scale of the farming enterprise and the utilisation of the mechanical appliances. The employment possibilities of machinery alone do not matter but also their fullest utilisation. In what proportions they should be combined is another aspect of this analysis. The social viewpoint, which in agricultural pursuits, is quite

important and outstanding ranges next in the discussion. Another question is the potential of *diffused management* in agricultural sphere, with special reference to the problem of equating organisation to the scale of farming. This is significant, for the simple reason that the organisational aspects are now receiving greater attention than ever before, especially in the advanced regions, which, at least qualitatively speaking, far outweigh the under-developed East and Middle East.

Difficulties of Analysis. Two sets of units have to be equated to one another, the *unit of organisation* to the *unit of production*, in order to obtain the best results. The unit of production tends to vary with circumstances and it is not easy to fix upon the *average unit* or the "*representative*" unit in the Marshallian sense. In the second place, it is difficult to define the *unit of organisation*, as determined by several factors including the producing unit, and still more so to give its exact size. In fact, the *optimum unit* aims at the fullest exploitation of the productive factors. Judged from another angle, the correspondence of the unit of production to that of organisation is another factor in fixing upon the optimum unit. Thus the unit of production should be the resultant of organisation and output. Other extraneous factors may have to be taken into account; the social institutions, the aptitudes of the peasant and the rural framework. These may, *however*, be ignored here though they play an important role in farming. Certain other "*economic factors*", which do not admit of correct measurement may be ignored too. For instance, the problem of the resources of the farmers and the community and their contribution are other problems. This analysis is of a qualitative nature, hence could not be precise in exact measurement, but therefore, confines itself to tracing economic-organisational tendencies.

Equipment and Machinery. It would be pertinent to inquire into the implication of the application of equipment and machinery from the viewpoint of the unit of organisation. Their fullest utilisation is a basic prerequisite of the optimum size; and this is true of the unit of production as well as of the unit of organisation, for as optimum production aims to utilise machinery to the best advantage, the objective of organisation is also the same. Usually, very expensive machinery is not used unless the organising ability of the manager warrants it and the nature of production demands it. Possibly, in the present state of technical knowledge, different sizes of machinery may be available; still, all the sizes may not conform to the production unit. This is where management steps in, for the manager has to select machinery

suited to production. Still, another question is would a greater utilisation of machinery and equipment compensate for the other disadvantages arising out of the enlarged unit of production. Usually, the application of big mechanical appliances is more suited to larger farms rather than to smaller ones. It may be restressed, that it is not machinery alone that determines the unit of organisation, but machinery, labourers, land and equipment, all these shape the unit of organisation, which therefore, is a composite unit. The basic unit of organisation varies from place to place, with respect to the utilisation of equipment and capital. Greater stress is laid on the utilisation of machinery, but because it represents the largest amount of fixed and overhead costs. Hence is stressed the role of machinery, for while other productive factors except land could be varied, it is these factors that have to be adjusted to machinery, which represents fixed costs of production. The unit of organisation, judged in the light of this analysis is the farm, which man and equipment are able to manage efficiently with a view to maximising production. In this view, the application of human labour is not rigid, but the quality and the quantity of mechanical appliance is given. From the machine point of view, the unit organisation is capable of utilising the mechanical appliances to their fullest. The significance of this lies in the fact that the increase in the area of a farm could not be in small increments, but in quantities added to the existing acreage if the economical exploitation of machinery is to be ensured. The intensity of cultivation should conform to the exploitation of the machines as well.

Right Proportions Emphasis needs now to be shifted to the question of the right proportion of productive factors. In the first instance, there must be a balance as between the managerial ability and the other factors of production, for an economic unit of organisation. It is not possible to lay down any rule in this connection, but there are some principles underlying this problem. While applying a certain given amount of managerial ability to land, equipment and labour, the law of returns have to be taken into consideration, for the aim of wise management would be to neutralise Diminishing Returns if possible. Too much managerial activity, invested on a small farm, would be mere wastage, for the profits may fail to rise because of its defective absorption by other factors of production. On the other hand, too little managerial ability, on the larger farms, raises expenses incurred on other factors of a production, with the result that profits again fail to raise. The advice is, therefore, that managerial ability must correspond with other productive investments in farming enterprises.

As the number of the composite units (labour and equipment) brought under one management is increased, the average return for unit of investment may tend to fall, as also the average net profit, but this could also be neutralised by a balanced correspondence as between managerial ability and other units, and profits may again rise. What is required is adjustment between managerial ability and other units of production; and any retarding conditions are not only potent in reducing the profits but also increase the cost of agricultural operations of agricultural commodities and of farm produce. The size of the farm should, therefore, vary with the intensity of the managerial activity. The farmer, then, has greater inducement to invest and work. This analysis leads to the conclusion that the farmer extends his managerial and organisational activities to the point, where the extra or the marginal profit is just able to cover his marginal or extra costs of input, or what he considers the extra costs of working and managing extra. It is obvious, therefore, that there could not be one size of the farm which pays best, any attempt to generalise from various statistical data would only give a view of the existing farming units, or at best of representative unit, but not of the optimum size both from the organisational and productive points.

The Social View-points. All farming is to be adjudged not merely from the strictly accountancy or economic angle, but also from the social viewpoint. Bearing in mind variations in the efficiency and the capacity (and therefore, productivity) of the individual farmers, we may conclude that the management of the farms is desirable (from the social point of view) by the more efficient farmers. If more efficient manager-farmers alone were to manage farms, the obvious results would be a better utilisation of labour, equipment and above all land, the scarcest factor, they could manage things better in the present state, but also prospectively speaking. But another consideration is that what raises the efficiency of management may lower the quality of the labour force under minute management, which may so plan things in detail that very little scope is left for individual initiative. And under detailed management, devotion to the work, as in small peasants, would be lacking. And that is exactly why the peasant-owners have been rather successful in their own farm enterprises. Certain kinds of farming lend themselves more easily to management than others, and in the latter types, the stress on good and efficient management would be misplaced, too. This means, incidentally, that these farms are the least amenable to larger scale agriculture. From the social point therefore, the question is: should individual initiative have preference over dependence on good management?

This is a tough problem. Still, it may be pointed out that the answer depends on the relative efficiency of the two, for in certain cases it may be personal initiative that may carry the day, while in the other cases, it may be the efficiency of the management that may have a better way of doing the farming chores. But before the final verdict, one must point to the diffusion of management, as far as the farm enterprises are concerned, for that analysis alone could complete the picture. At this point, however, the social angle does not admit of the superiority of the management efficiency over that of personal stimuli.

Diffused Management Farm management is not the same as industrial and commercial management, it is *diffused* through the various details of farm work, but not *delegated* as the other types are. Under delegated management, the farmer is not much concerned with the details of his work, while under diffused management, details are not transferred to another person, the same manager has to devote himself to them. Agriculture is characterised by *diffused management, not delegated management*. As the size of a farm enlarges, there is diversion of the farmer-managers' attention from the details of farm work to *concentration on general supervision*. As more and more details are delegated to hired managers, labourers and supervisors, work is not so well looked after as when the farmer were to manage the whole show himself. This means that some of the details may even not be attended to by the supervisors who may grow slack in this respect, with the result that farming, which calls for very detailed and intimate attention, may be less efficiently managed. It is here that the problems of management have to be tackled with an eye to everyday fluctuations and farming trends, hence the necessity of *diffused and detailed management, and not delegated management*. Thus the question of the most desirable size of the farms is a function of efficient management which may be able to exploit the resources to the best advantage. The manager's point of view, therefore, is to balance the advantages of more efficient general supervision and management against losses in the execution of details of the work done with less of personal interest. The conclusion appears to be that profits may be increased by the extension of management, but that production needs to be maximised as far as possible. That actions and decisions of farmers are not controlled by economic motives alone. They are often directed by the social and personal satisfactions that the farmers derive from the pursuit of agriculture. Often is the "loss" compensated by the social "gains" from self-directed activity. The proper size of farming is a subject beset with economic, social, personal, technical, commercial, and even legal historical factors.

The Dynamic Aspects. In this section attention is devoted to the study of the present trend and the inference therefrom. The best farm size is prospectively determined. A consideration of the economic and uneconomic holdings is taken up here. What distinguishes economic holdings from the uneconomic ones? And then the last question is about the unit of production from the *dynamic angle*. This subject, though apparently narrow in range, is still significantly concerned with the problem in hand, for the real study is its dynamic aspect, as the systems of agricultural production are fast changing and the result of the same have to be properly and correctly weighed.

Present Trends. Current trends could be analysed in the light of the measures, suggested above. In the more advanced countries there is a shift to an enlargement of the size while the trend in the legislative sphere is to its limitation, so as to diversify distribution of farms among as large a number of tillers as possible in the countryside and the rural regions. In the suburban and the urban areas, the trend is towards smaller size and an increase in the number of part-time and residential farms. On the whole, the shift is towards larger and bigger *family-sized* farms. But the trends may differ from country to country though the main trend is to the enlargement of the family-sized farms. But legislation is in the corrective direction, for the effort is to widen the distribution of the farm lands, and of wealth and broaden the economic base of the social structure. Another trend is also visible, and that is towards *group* and *chain* farming. These farms do not have the cultivation process under a single owner, but have their ownership diffused and vested in a group. The chain system is also designated as *integrated* farming, its organisation is similar to that of the chain stores. A recent development is "factory farms" where agricultural production has been much standardised as in a factory. But in the embryonic and the backward economies, these developments are conspicuous by their total absence, for their problem is that of making the size of the farms uniform. The attempt is, therefore, in two directions, one in the direction of splitting up the large estates and parcelling them out in family farms, and secondly, to consolidate the uneconomic farms. This leads to other aspects of the problem of economic holdings. It may, however, be pointed out that the problem in these economies is not a very complicated one, at least it does not appear to be so, in view of the fact that the aim is to achieve the best size in most countries.

The Best Size. It is difficult to say categorically what the best size of the holdings should be. No optimum size

fits in with the variations in local condition, nor does it remain the optimum with the passage of time. The 'best size' is the one, which is the *practical optimum* for the farmer. This decision would also depend largely on the way and the method that he follows for changing the farm size. A plot which may (more closely) correspond to his capacity and efficiency may be selected by him in preference to the one that he owns at that time, or more land may be rented temporarily with a view to experimenting in management of larger farms. Another safer and better method would be to intensify the cultivation of land in order to obtain the maximum quantity of produce usually secured from a larger farm, this is an interim measure, as the farmer would buy another farm if resources permit. Probably this is why intensive farming is in vogue now, and also diversification of production. The decision whether or not to enlarge his form is mainly to be arrived at in the light of the past data, with regard to output and costs, he can plan alternative budgets and then decide. The only possible mistake is in respect of his own capacity to manage and supervise a large farm, and therefore, it is best to discount a little the size arrived at by these calculations. Also errors in the pre-estimates are easily corrected if the farmer, in the first instance, only rents additional land, before buying it. And it may be safely said that the only basis for the farmer to decide about the best size is that of his past experience on the farm he cultivates. On his present farm, it is advisable to expand operations both extensively and intensively and also make them more diversified.

Economic and Uneconomic Holdings It is possible that large holding may be economic in that the full use is not being made of the whole of the land which the tiller of the soil has at his disposal. This concept of the economic holding is at variance with that in common parlance. A word of explanation is necessary in this context. The economic holding need not be confused with the optimum one as in its various perspectives. Nor does it utilise the resources to the best advantage, as in the optimum size. The economic size would be that which pays the farmer's way, it does not result in any loss to the farmer. On the other hand, the un economic holding is un economic for the cultivator and results in loss to him. Mostly, these holdings are small sized. But this is not always the case, for the un economic holdings may be un economic being too large to be managed efficiently. Too large a holding he cannot manage the equipment and the labour are wasted away. In this context, the fact is that if the holding is too large, equipment and labour are over-worked, resulting in the operation of the law of the diminish-

ing returns. The conclusion appears to be that the economic and the un-economic character of the holding is not determined by size alone, but also by the nature of the farming operation and income therefrom. The main test is : does the holding pay its way ? And judged from this angle, a holding is styled as an economic one. The small tiny plots are often "uneconom" because they are not remunerative and often result in loss to the enterprise ; these holdings are liabilities for the farmer and may even eat up his assets. The management, too, helpless when his resources are drained by the uneconomic character of his holdings. But there is no rule of thumb deciding this matter.

The Unit of Dynamic Production. The farmers to plan, production have to fix upon the unit of dynamic production or the size of the unit in the perspective sense. This would surely depend on the character of agriculture, prospectively speaking, and the unit, the optimum one in the dynamic sense. The modern mechanical appliances are being used in the farming system. The implicit assumption is that as the farmers grow wiser and more trained and educated, and as the states and the planning authorities become more and more welfare conscious, the unit of production, dynamically speaking, would be the one which conforms to the optimum size. What determines the optimum size, also determines the unit of dynamic production. Farmers like to expand, but may not be able to do so in view of the hindrances to expansion. Whether in point of the intensity of culture, or in point of the extensive character of enterprise, there are some bottlenecks in the way of expansion and its achievement. In the first instance, farm buildings tend to be adapted to the size of the existing farms ; it would be difficult for the farmer to anticipate the course of dynamic progress as to be able to raise buildings, conforming to the anticipated size. But this is not insuperable, as the possibility of adding more buildings or extending them is not ruled out, nor remote. Even in the underdeveloped countries, the difficulty of adding more land without any buildings persists, but the advantages to be derived out of them get lost without production being at the optimum level ; either. And then expansion may not take a compact form ; this even when the farmer aims at expansion, he may not be able to do so, for the simple reason that additional land (the most important productive factor of agriculture) may not be available, just adjacent to his old farm. And the expense of maintaining two separate farms may neutralise the advantages of expanded production. If nothing else, the difficulties of management may multiply ; and these are important factors in farming success. Another point is that there

may have come about such changes in the technical and the allied conditions as to make the same farm now economically suited to agricultural production. But twice as large a farm may not be suitable. Increase in the other factors of production may not be very easily possible, except at more cost per unit of production. Because of the utilisation of equipment and machinery, the farmer may not be able to reap the fullest advantage out of the machinery that he has already in his possession. Machinery is seldom a divisible unit, hence the difficulty of proportionately increasing the mechanical appliances with a view to reaping the greatest advantage out of the same. In the light of all these considerations, it may be pointed out that the expansion of the farming unit is a task, which is beset with difficulties, and one that is also hazardous. The dynamic unit of production is quite difficult to attain, in view of the fact that the nature and character of the agricultural enterprises may have changed. The problem is very complex, indeed.

Summary To sum up, that the ground covered in the chapter, though narrow in its scope, has yet been significant in its contribution to the analysis in hand. Starting with classification of the farmers and their modes of farming, the discussion related to the distribution and the size of holdings. Sub-division and fragmentation of the holdings was discussed next, with remedies thereof. In the section following this preliminary one were explored the factors determining the size of the holdings. In this connection, the density of population was considered in the next paragraph. But on deeper analysis, it was discovered that the employment opportunities and the land tenures had an important influence on the size of the holdings. And then the operating unit must be also in accord with the farming and the producing unit. The distribution of wealth has a bearing on the size of the producing unit. Historical factors were also dealt with in their proper perspective, for they have a determining influence on the size of the holdings. The management factor, as bearing the size of the farming units was analysed in the next paragraph and the whole section rounded off with an explanation of the various economies arising out of the types of farmings in relation to their sizes and scales. It is not claimed that the study is exhaustive in any respect still the main points were underlined. The next section 'Sizes and Scale' chose to delineate the main features of this problem. First were examined the economies of scale, and then the measurement of various factors invested in farm business and cultivation. Two input measures were suggested, the investment measure and the annual cost measure. The

economic aspects of the large-scale and small-scale farming were then analysed : the small-scale being the prevalent type of farm or organisation. In the light of the controversy between the large-scale and the small-scale, was discovered the optimum unit of cultivation. The optimum unit is not fixed, it fluctuates with varying circumstance of different systems of farming. The economic significances of the same was brought out. What should be the scale of farming, was the next subject discussed. Then were thrashed various concepts of the unit of management. How the unit of management and organization varied with equipment and machinery was the subject matter of the following paragraph. Nor was overlooked the social aspect, which is important. Diffused management was also underlined in its special characteristics applied to agriculture. The dynamic concept of the size of the farm was defined in this section, with a special emphasis on the present trends. Attention was drawn to the 'best' size of the farm holding, which the farmer may take as practical one for his guidance. The question of the economic and the uneconomic holdings was thrashed with a view to finding what the economic holding may be, and eliminating the uneconomic sizes. The section was concluded with a short but explanatory paragraph on the concept of the unit of production in agriculture, from the dynamic angle. The unit of production is more important from the viewpoint of progressing agriculture, rather than from the merely static and current angles. On the whole, the argument was built up to stress the need for the correct and the best size of the farm holdings, from the operational, the organisational, the investment, and above all, the social views.

Conclusions. Important conclusions emerge from this brief and rapid survey of the problems relating to the size of the holdings. In the *first* instance, a consideration of the farming unit led to the conclusion that it was a variant of the types and structures of the farming undertaken. The larger units were getting smaller by the process of fragmentation and subdivision of holdings. In respect to the determination of the farming units, it was held that land tenures were more significant factors. Other similar ones included historical, and social causes. A distinction between the operating and the producing units revealed that the former was also an indirect determinant of the size of the latter. Regarding size and scale, interesting points were raised about the "measure" of the three suggested measures, the investment unit was found to be most suited to calculations in hand. An enumeration of the economic aspects of the large and the small farms brought to light the suitability of the small scale to the prevalent

farming systems, because of certain inherent merits. An "optimum" size could not be precisely hit upon, still it could be said with some exactitude that it should fully utilise the varied resources of production. Another noticeable point regards the unit of organisation as nearly the same, as the unit of cultivation, practically speaking. The difference, if any, concerns only the very advanced economies, where the management functions of the farm have expanded. In this context, a distinction was drawn between the pure management, the diffused management, and the delegated management. It was conceded that delegation of management was not much of a practicability in agriculture, except on the "factory" farms; diffused management is the usual rule even in the advanced communities. In view of this factor alone, the trend is towards the disintegration of the large estates if not definitely towards the small scale. Judging from the social standpoint, the small scale is being now favoured as the dominant form of cultivation. From the dynamic aspect, the "best" size is the one, which accords to the needs, the types, and the characteristics of the farm operations, practically speaking, but nothing definite can be said about the unit of dynamic production. One important conclusion is that the unit of cultivation may be uneconomic, even if the scale of cultivation is large, with estate farming, being practised. But the objective of economic policy and agricultural planning is to eliminate the uneconomic holdings and if possible, attain the optimum or at least the best size.

CHAPTER XXII

OWNERSHIP AND TENANCY

Explanations. Land Tenures. Agricultural Relations. Ownership and Cultivation. Landlords and Tenants. Modern Land Tenures-Copyholds, Leaseholds. Corn Rents. Profit Sharing. Share Cropping. Share Renting; Land and Stock Shares. Cash Tenures. Part Owners. Croppers. Occupying Ownership. The Economics of Tenancy. Review of Tenancy. The Economic Angle. Increase of Tenancy. The Industrial Impact. Depression and Instability. Defective Legislation. Long-term Leases. Damages and Compensations. Alienation of Land. Land Values. The Inference. Agricultural Relation-Tenancy and Improvements. Community Institutions. Standard and Status. Landlords' Attitudes. Personal Adjustment. Division of Rights; Social Factors. Uplifting Tenants. Reducing Tenancy. Tenancy and Economy. Leases and Lessees. Permanent and Perpetual Leases. Restricted Leases. Modern Trends. The Perspectives. Summary and Conclusions.

This chapter discusses the main forms of tenancy, the "bane" of Agriculture. Tenancy still persists in a large part of the world, even though efforts have been made to exterminate it and to raise the status of the tenants equal to that of the peasant proprietors. The subject is inexhaustible, still here are covered its main economic aspects, relevant to this discussion. Certain definitions and explanations of such terms as "Land tenures", "Agricultural relations", and "Tenants". are followed by brief description of the modern land tenures. The copyhold tenures, the leaseholds, profit sharing, share renting and cost tenures would be described from the socio-economic point of view. The economic aspects of the tenancy problem is proposed to be discussed after an appreciation of various forms of tenancy and tenures. The reasons why tenancy has been on the increase are unravelled in the following paragraphs, while the influence of the expansion of the industries underlined thereafter. An account of the impact of economic instabilities on the numbers of tenants and their quality is followed by a study of the effects of defective legislation. How alienation of land or the restriction on its transfer affect the forms and types of tenancy is analysed in the next paragraph. The most important subject relates to Agricultural and Landlord-tenant relations, to be thrashed in the light of community relations, and institutions, and the social factors, to name only a few of the more important brought to bear upon the problem. The chapter would be rounded off with a survey of the main problem of the leases and the lessees, this is in the form of a review with some suggestions. Special attention is devoted to the *improvement* and the *perpetual* leases

social classes, have also an indirect bearing upon the economic structure of the village. But it may be pointed out that the various relationships in the rural sphere are governed by the fact of the possession of land, hence they originate from land tenures, ownership and tenancy.

Ownership and Cultivation. The cultivation of a plot of land does not necessarily mean that it is also owned by the tiller. In fact, as often happens, the two may be divorced, somebody may own the land and somebody else may cultivate. By "Ownership" is meant the right of the transference of land, and the right to sell it away. But, nowadays, ownership does not remain unrestricted, law hedges it, the landlord could not let his land remain idle, or fallow, as its produce influences the national economic trends, direct and indirect. Hence, ownership has been restricted in social interests. Again, the tenants cannot be ejected at the sweet will of the landlord. Often it does happen that ownership and cultivation do not go together. And between the owner and the cultivator, several intermediaries may intervene, much to determine agriculture and its productivity. If ownership and cultivation are vested in the same person, there would be incentive to do the best, but with intermediaries the incentives fade away. This is how the distance between the owners and the cultivators weakens motivation in agricultural production. Ownership may not involve cultivation and cultivation may not be accompanied by ownership; the two may be far apart. The gulf between the two determines the character of agriculture and also its prospects in the future.

Landlords and Tenants. In this short paragraph are noticed landlords and tenants. Landlords may not be the cultivators of the estates which they may own jointly and singly. The landlords may be the absentees who do not even visit their estates but are only concerned with their rent; their interest is only in the income they receive; they are not usually concerned with land improvement. Many intermediaries are there between the landlord, the tenants and the actual cultivators. The burden on the actual cultivator may be very heavy. There may also be the participating landlords, who claim a share out of the produce; their share rises with better harvests. But this not all. These landlords would like their land to improve, for theirs is not a fleeting interest, but a permanent and living one. In the case of tenants, there are several classifications, depending on the strength of the right and the titles to cultivation rights.

Modern Land Tenure: Occupancy tenants cultivate land as matter of right and cannot be easily ejected, unlike tenants-at-

in particular. The modern trends also are noticed in the last paragraph of this penultimate section.

Explanations This discussion starts with an introductory section for the explanations of various terms to be recurrently used in this chapter. Most terms are borrowed from the legal vocabulary, without visualising the legal shades of their meanings. *Land tenures* is recurrent in economic literature, and has to be clearly understood. The descriptive survey also includes an explanation of such terms as ownership and tenures. It should be borne in mind that the terminology is merely descriptive and not analytical. The term "*Land tenure*" is used to cover the economic, legal, political and social relationships and customs which are concerned with the ownership of land. Actually, the reference is not only to an agricultural problem, but also to one which concerns itself with the non-farming and the urban interests. It is rather an intimate subject of land economics, than of any other part of Agricultural Economics. But land being the most important productive factor in agriculture, this study is also important. The economic implications of land tenures, rather than the social and political ones are stressed, even though the various issues are inextricable and could not be discussed in isolation. In fact, land tenure is more of a legal concept rather than social and economic, and hence a function of the legal environment rather than the economic. In this sense land tenures would involve a description of the legal and the social discussion, without a discussion of the bigger theoretical questions of Law and Politics. The economic implications of the land tenures range so wide that the problem does embrace quite a few social and political issues of which one has to take notice, in order to assess the problem in its proper perspective.

Agricultural Relations The term covers the relations as between the landlord and the tenant. These relations are the foundations of rural sociology. To build the rural society and reconstruct it, the base is provided by agricultural relations in the rural sphere. Of course, in its broadest sense, the term, agricultural relations should not only cover such relations as subsist between the landlord and the tenant but also between the creditor and the peasant debtor, between the different social classes in the village, and between the officials of the villages and the people. But the last category of the relationships belongs to the administrative, the political sphere, and as such excluded from this survey. The debtor creditor relationships surely have to be included in the sphere of Economics. And the relationships as between the different

social classes, have also an indirect bearing upon the economic structure of the village. But it may be pointed out that the various relationships in the rural sphere are governed by the fact of the possession of land, hence they originate from land tenures, ownership and tenancy.

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will In this section are underlined the characteristics of modern land tenures, with their historical background, for these tenures are derived from the land tenures of the past A brief description of the old tenures, e.g. the copyhold, introduces us the present forms such as the cash rents, profits sharing and croppers, to name only a few Modern land tenures are very complicated and the issues rather confusing, still, this description is exhaustive and relevant to the study in hand Land tenures relate to the amount of land titled by an operator, different from the unit of cultivation optimum from the economic point of view Below are described the implications of various land tenures, with reference to the problem in hand

Copyhold The copyhold tenure prevailed in England being the first to be introduced there Descriptively, this is the system of a perpetual right to the use of land, with the proviso that certain payment is to be made to the landlord in accordance with custom In this connection, attention may be focussed on the fact that the payments were made to the manorial lord, and were regulated by customs of the manor The tenure was permanent, this fact proved to be of benefit to the copyholder, who could make improvements in land and also reap the advantages The rent, which was determined by the customs of the manor, was nominal as compared to what other tenants had to pay, and what was prevalent elsewhere It could be described as *nominal tenancy* But this system is only of historical and academic interest, for it no longer prevails anywhere

Leaseholds This also originated in England; the tenants hire land from the landlords on a certain rent The young farmer becomes a tenant with the expectation of improving his prospects But this must not be interpreted that the tenant wants to be an owner of land, he only looks forward to getting a bigger and better piece of land The reason is that the British tenant being well off, does not think of becoming a landlord During the course of Industrial Revolution, there was also brought about a revolution in the methods of farming in England this led to an increase in the size of the producing and the farming units, to the enclosure of the common lands and the rise in the status of landlords, so necessary to the development of New Agriculture, which had to be financed by large sums of money In this revolution the landlord swallowed the small peasant who disappeared completely from the scene And to own both land and capital required huge resources on the part of the landlord who alone could afford the investment Hence leaseholds became prevalent as the ordinary farmer found it more useful to stock his reserves rather

than whittle them away in the purchase of new lands, which process became extremely expensive. The farmers stocked their resources in the farms instead of purchasing the same, for the former course was more beneficial to him and cheaper. The position of the tenant is very much secured by Law, under Leaseholds.

Corn Rents. This is another variation. This system was devised to meet the complications caused by the fluctuations of prices of agricultural produce. Under these fluctuations, both the peasants and the landlords suffered. The tenant used to pay a certain amount of cash which was made equivalent to certain fixed amount of corn. The system brought stability out of price chaos prevalent in Scotland, where this system was in vogue. This corn rent was figured on the basis of what was described there, as the "farm prices of the county": the sheriff of each county summoned the jury once a year to examine certain witnesses and to fix the "fair prices" on their testimony, of the different grades of grain. During falling price, the system was generally prevalent in that country, simply as an insurance against fluctuations. In certain other places, too, this system was implanted, but, unhappily, failed to gain favour with farmers, landlords and tenants. An effective regulator of rents, this adjusted them to prices, both in the short and the long run, as agricultural prices were stabilised in consequence of the adoption of this system.

Profit Sharing. Under this system, both the tenants and the labourers are paid a share out of profits earned on the farm, in addition to the regular wages. The payment of profits in addition to their regular wages is made, while alternatively, profits may be shared only and no wages paid. It is the latter system that is the vogue; tenants are paid a definite percentage out of the proceeds of the year's earnings. But since, it is difficult to assess correctly the year's profits it has been criticised as vague and is now dying out. But the bonus, or the addition to regular wages, has an advantage in that it may be used as an extra reward of the tenant's or the labourer's ability and industry. And when wisely administered, this system may prove useful to workers and farm produce; it may mean ampler production and less wastage. But it may be pointed out that profit sharing has taken many forms and could be described more as a means rather than a method.

Share Cropping. This is not an isolated system by itself, but a major type having several variations of the same genus. Share cropping as understood, is that system under which the crops or the farm produce is shared out between the cultivator

and the owner on a definite basis. Thus the owner takes a certain share out of the crop which is produced on the farm. The tenant is not free to cultivate any crop he pleases for the interests of the landlord are also involved in the produce to be raised. He is not an absentee-landlord, but an active participant and director of the process of cultivation which, of course, is undertaken by his tenant, but under his guidance. Its advantages are obvious, rents are regulated to the total value being paid in kind rather than in terms of cash. The landlord shares with the tenant, the agricultural fluctuations, in respect of prices and produce. In India, particularly this system persisted till very recently, when the British rule introduced money in rural economy. In the pre-British period, landlords used to get a certain share out of the produce on the "rented" farm, he shared in the fortunes of his tenant. While this was so in the private sector, it was also extended to the payment of Land Revenue, which was paid to the State in kind, and thus automatically regulated according to price variations.

Share Renting The tenant has to share with the landlord both the expenses and the costs of cultivation, in this type of tenancy. The system is prevalent in the United States and also in India. This is preferred to other systems because the tenants have less cash and cannot pay rent. And then from the tenant's standpoint, the risk is also less than it is in pure tenancy. Many tenants do not have ample resources for cash rents, which may be pitched high. From the landlords' point of view, the system is convenient, as they could supervise very closely the land they give on share basis, the general management remains in their hands. This system is also alternatively known as *Metayage* or *Batai* (in India). It is usually the choice of the crops and the organisation of the field system that is in the hands of the landlord. He benefits from better crops—the result of the joint labour of the landlord and the tenant. And above all, the collection of rent is easier than in cash tenancy. The share rent also automatically adjusts itself to fluctuating prices but not cash rents, which hit either the tenant or the landlord. But it must be remembered that this system could only succeed if the land is under close supervision of the landlord, and not left entirely to the whims of tenants.

Land and Stock Shares Under this system, the landlord furnishes a part of the livestock or has an interest in the livestock employed on the farm. This is also a variation of share renting. In general, the landlord supplies the land, the buildings, and the livestock to the peasant who in his turn furnishes the farm implements, the machinery and the labour which may be required for the farming operations.

The livestock may also be owned jointly by the farmer and the landlord, but this is not rigid, it depends on the contract between the landlord and the tenant or the custom prevalent in the countryside. Materials for making repairs are supplied by the landlord, while the tenant does the repair work; the working and maintenance expenditure of the livestock are borne by him, while the landlord supplies the same; the other farming expenses, those for the thrashing, silage and cutting, are shared equally, while the dairy equipment is also owned jointly. This method is in vogue in the United States. An inventory of the stock may be taken at the beginning of the tenancy and by the receipts shared by the terms of the agreement or by the customs established in the region as also the recurring costs. The proceeds of the farm's produce are shared mutually by the landlord and the tenant as also all increments and decrements in the value of joint property. In the management of the farm, the landlord participates, for his investment is high and the tenant is usually guided by the landlord, for this is to his advantage. This system admittedly is to the benefit of both the landlord and the tenant, and is also rather cheap.

Cash Tenures. This system stands in contrast to share tenancy and ensures the payment of cash in lieu of rent payable to the landlord, who being away from the scene of harvesting is too busy to attend to the farming work, and contents himself with accepting a certain amount of cash. Certain experts are of the opinion that the tenants work harder and therefore contribute substantively to national agriculture. Be that as it may, one thing is conceded that the land under the plough gets exhausted sooner under cash tenancy than under any other system. Again, the labourer-tenant tries to get the maximum out of the land and this leads to a confusion between the landlord-tenant relations; for the tenant who hires land for one year is keen to secure the highest possible profit in that year, with the result that the land is usually devoted to the cultivation of exhausting crops, the larger profits being secured at the cost of the prospective yields and profits. True, that certain regulations may be imposed on tenants, but it should also be remembered that evasion is possible as the regulations are much to the annoyance of the tenants. Then there also arises the question of compensation to the tenants for improvements made by them, but this is anticipating the argument below.

Part Owners. Next are owners, who own land only in part. Ownership is joint and every one of the partners is an owner jointly with others. This form is still in vogue in certain countries of the East and the Middle East. The ten-

ancy system may be described as joint ownership. Land is the joint property of the clan or the tribe. Some of the joint owners are not interested in cultivating land, but others are. Each has a theoretical share which though definite is not located nor alienable except to other shareholders and joint proprietors. Cultivating owners are paid wages for their labour while the others simply get a share out of the profits of enterprise. In addition to the cultivating owners, who get both the dividends and wages are also employed other tenants and labourers on contract. This type of tenancy does not raise much confusion for most of the tenants are also the owners of land, though jointly with others. Still the system, an indigenous form of co-operation is pregnant with problems of tenancy, if a number of part owners are absentee landlords and sleeping partners only and not active and cultivating operators. But seldom does this happen with part owners, in actual practice.

Croppers This is another form of share tenancy, but not of importance in tenancy problems. Under it no capital is required for the tenant to invest in land. The landlord furnishes land, tools, and buildings, and may under special circumstances advance sufficient money to the tenant cultivator for subsistence while the crop is being raised. Croppers labour hard to produce the crop. The division takes on the basis of equal shares while the cropper also receives a free house and sometimes a garden for his family. The croppers do not get any wages, instead they share the crop. Under conditions of keen competition among them the share is less than half. In certain regions the croppers are also designated as the *halves*. Sometimes they are engaged by merchants, who have large farms scattered all over the country, hence supervision is not so detailed as in other forms of share tenancy, so that he is more or less independent and autonomous in his work.

Occupying Ownership Under this system the landowner is himself the cultivator of his lands. The land tenure is the dominant system in most economies and regarded as the best. Its special virtues emanate from the benefits supposed to be incidental on the system of private property. Arthur Young has been quoted, times out of number, for his observations regarding the aphorism that 'the magic of property turns sand into gold'. Property and its control are vested in the same person, whose personal interest, coupled with his economic freedom to till his land as he likes, is noticed in this connection. Monetary handicaps are there although it could be said that the peasant is also to reap the fullest out of the investments he makes. And lastly the family interests make

for the lack of continuity in the farming programmes. There may be subdivision and the fragmentation of the peasant's holdings at his death, with the result that the size may become uneconomic one; also the extra large size may not be so utilised as to enable the peasant to reap the fullest advantage for his subsistence, or to be remunerative to him either. The chronic encumbrance and burden of the mortgage debts on the peasant proprietors needs to be reckoned with, as against the legislative efforts by the welfare states to improve his conditions.

Economics of Tenancy. In this section are dealt the economic aspects of the tenancy problem. In general, it could be said that the tenancy has been on the increase, especially during the Great Depression. Agricultural instabilities have also been working in the same direction. Defective legislation, has been responsible to a great extent in bringing about an increase of tenancy and creating problems. It is also possible that the long-term leases and the annual agreements have been effective in complicating issues relating to the question of compensations and damages. Alienation of land has been a source of confusion: at least this has been the experience of the legislative effort in certain parts of India. The impact of land values, which may rise or fall, is also traced in the final paragraph of this section. But, before the main issues are raised here, a birds-eye-view is essential.

Review of Tenancy. In tenancy, one feature is the divorce, both from the legal and economic view-points of ownership from cultivation. The landlord usually supplies permanent equipment and fixed capital and the peasant working capital and labour necessary for working the farm. This is universally true. Systems of tenancy could be grouped from the economic point of view on *fourfold basis*. *First*, classification could be according to various forms of the payments to be made just as in the preceding section. *Second*, grouping is according to the degree of control exercised by the landlord, so that the landlord-tenant relations are comprehended. Included in this form of tenancy are the systems of metayage, and share tenancy, in which the landlord does exercise a considerable control over farming operations. Legislative efforts have been made to regulate the distribution of control and to give the peasant-tenant sufficient autonomy in this respect. In case, the landlord wants to exercise greater control he must be prepared to make larger investments in the *working* and the *fixed capital*. *Third* are those forms which could be classified according to the length of the agreement, at one extreme are tenants-at-will, while at the other are those of a life-long duration, the hereditary tenants. And *lastly* are those which may be classified according to the status of the landlord, and

implicitly that of the tenant. There may be full private or complete public ownership of land, or the nationalisation of the land too. In between there may be several types, with partial or corporate control.

The Economic Angle The economic aspects stress its advantages and disadvantages. In the first instance, most advantages are derived from the degree of functional specialisation that tenancy could admit of, the twin functions of administering and owning the land belongs to the landlord, while those of cultivating it and supplying the working capital to the tenant. The landlord may not be a good peasant, he may be ill equipped with modern techniques and farming practices, therefore, tenancy may be of advantage to him as also to agriculture. Regarding the two functions, land management and farm management, it may be pointed out that while the landlord devotes himself to land management, the tenant undertakes farm management. Thus is brought about some sort of the division of labour, with its attendant advantages. In the financial sector, the money resources investible on a farm are widened, investment flows both from the landlord and the tenant, both want to make a success of this business. This has advantages similar to those secured from partnerships in the commercial sector. And then the enterprise has financial elasticity, for more or less could be invested, as and how circumstances warrant. The tenant invests more working capital, if necessary. And the financial storms could be weathered in a much better manner than in any other form of agricultural enterprise. From the organisational point of view, the poorer farmers who have requisite ability, but lack financial and other resources, are able to farm on their own. Thus the dormant activities and the abilities of enterprising and industrious farmers are discovered by the system of tenancy. From the purely technical point of view, this provides an impetus for the advancement of the technique. The landlord, if enlightened and capable, is willing to assume and adopt all such technique, as may be helpful. Progressive landlords may provide a stimulus to inventors, they adopt their ideas and innovations, provided these are useful. In fact (and the history of the agricultural developments bears ample testimony to this) the progressive landlords encouraged the inventors and the technicians to venture in the agricultural sciences. But there is the seamy side of the picture, too. In the first instance, there is an absence of fair rents, the absentee landlord and his intermediaries exploit the poor and the helpless farmer-tenants. In the second place, there is the fixity of tenure, which may also make the relations and the status of tenants very rigid, much to social detriment. Thirdly, there is free sale, which means that undue competition is imported into the agricultural sector, especially

in the overpopulated economies, with very invidious results. Fourthly there are restrictions imposed on the tenants so as to damp all their enthusiasm and initiative in farming, with adverse results. And lastly there is the unwillingness of the landlords to fully compensate the tenants for the improvements they might have made.

Increase of Tenancy. Attention may be drawn to the increase of tenancy in several countries. Peasant proprietors were cultivators everywhere, but with the passage of time, several other factors reduced them to the status of mere tenants. Interesting as these causes are, they are instructive from yet another viewpoint, that of the ultimate reduction of tenancy: if the causes of this increase are known it is possible to take steps to eliminate the same. Tenancy is the bane of modern communities, though it may not be correct to generalise on this basis alone. Still, on the whole, unless, hedged by protective legislation, tenancy has been not a very progressive element in modern rural world. Efforts are being made to raise the status of the tenants to that of cultivating owners. The increase has been coincidental with the decline of owning cultivators and the rise of landlords. Technical factors have been responsible for this as agricultural operations are rather difficult to carry on because of rising costs of adopting new technique. As pointed out earlier, the increase of tenancy has been the result of the 'New Agriculture', which came to be established in England after the Agrarian and the Industrial Revolutions. The mounting costs of the marketing of agricultural produce have also been responsible for the increase of tenancy. What industries became established, it was more remunerative to work as industrial labourers than as agriculturists. In nearly all countries, the tenants, as a class are posing a problem to the social and the agrarian reformers who may like to raise their status to that of full-fledged occupying owner-cultivators.

The Industrial Impact. In the first place, the impact of industry has also been aggravating the problem of tenancy. When the manufacturing industries expanded, they brought about fundamental changes in the sphere of agriculture. The domestic system of manufacturing was not profitable, the cottage industries were uprooted, for no longer could these industries stand competition from the mills. Subsidiary lines of work were extinguished quite, with the result that the farmers became underemployed, and looked to other avenues of employment. Finding their own tillage unprofitable, they became overindebted and sold away their lands (the land prices also rose at the same time) and became tenants. This has been

not only true of India, but also of all other countries where the impact of the industrial revolution has worked in the same direction. On the other hand, those who grew richer, because of the spread of industry and its remunerativeness, desired to own estates, probably to add another string to the bow, with the result that these potential purchasers of land, raised land prices and bought out the cultivating-owners. Men of new wealth began purchasing the smaller peasants, for whom agriculture had become an unprofitable pursuit. Hence it was more profitable to work as a tenant for somebody else rather than work independently, and face the hazards of the agriculture.

Depressions & Instabilities Fluctuations in the agricultural sphere have also broken many cultivators who succumb to the status of the tenants. A discrepancy between the rate of interest which the farmers pay on borrowed capital, and the net return they get from land, compels them to give up their efforts to cultivate the land and avoid suffering a loss. They prefer to become tenants, instead. Agricultural depressions and instabilities also tend to work in the same direction. The peasants are forced to become tenants, as the depressions reduce their income very considerably. Planning is impossible, for all the pre-calculations are upset. And further disintegration of the holdings accelerates this process. Forced sales become more and more frequent, for the unit of production is uneconomical, too. It is common knowledge that agricultural costs lag behind the agricultural prices. When prices register a fall, as they would during a depression, the costs do not, with the result that agriculture is rendered an unremunerative pursuit. One more factor also operates, namely, that the farmer is not able to reduce his living expenses, with the result that he lives out of his means, which meanwhile shrink beyond recognition. For the debts that he negotiates, he has to pledge his own lands, and this results in his inability to recover it and redeem it. He is reduced to the status of a tenant, in the bargain. Falling prices thus ruin the owning cultivators, who find themselves heavily in debt. Suffice it to say that the rising indebtedness smothers the peasant proprietor and reduces him to the status of the tenant. All these encumbrances affect the poor tiller very adversely with the result that the tenancy spreads like wild fire. In the urban sector, unless restricted by the alienation of land acts, the craze for the accumulation of wealth and property leads several townsmen to have larger amounts of property in rural areas. This hits the peasant proprietors who fall to the status of tenants.

Defective Legislation Tenancy legislation could bring about an extinction of tenancy, or at least uplift tenants. But

if legislation is defective, it becomes an instrument for the increase of tenants and also worsens their conditions. In India, for instance, defective legislation has been responsible for worsening the conditions of tenants and multiplying their numbers; as in the depression period. By restricting the sale of land, only to the agriculturists, the state only restricted the market for the landlords to purchase lands. The peasant proprietors, driven by hard circumstances, sold their lands to those landlords who, in this respect at least, enjoyed a monopolistic position, and bought land at low prices. Debt legislation too acted in the same direction, for with the restriction of credit farmers (demand for funds was inelastic and no other source of borrowings left to them), the peasant was hard pressed to sell away his land and became a poor tenant instead. Similarly, marketing legislation, by imposing very many restrictions on the marketing procedure, presumably with a view to rescuing the peasant from the clutches of the *Baniya* only exposed him to open competition, much to his detriment of his urgent need to convert his produce into cash, forced him to bypass the law and accept whatever price he could get. More often than not, he was not successful in this venture and commodities had to be sold at rock-bottom prices which, being unremunerative, did not cover even his expenses of production. Disgusted, the peasant became a tenant, being unable any longer to face falling prices. In this context, defective (and short-sighted) legislation is a potent factor in multiplying tenantry, and also worsening their lot. Most tenancy legislation has aimed at the uplift of the tenant-cultivator, by ensuring him the status of occupancy tenants, so that he could not be turned out. But in actual practice, the tenant remains where he was, and the landlords do not let his status be raised, they keep him tied down to the lowest position. Defective legislation worsens his lot.

Long-Term Leases. In this matter, attention needs to be diverted to the long-term lease, which provided an *attractive* to tenants. The hard-pressed peasants, forced by circumstances sell their lands. In effect, they remain on the same plot having executed a long-term agreement with the landlord, who, being not conversant and familiar with condition of land, prefers to receiving his rent and conveniently retain his ownership. The peasants are tempted by easy terms of the agreement, which often covers a very long period of time; they prefer to become tenants instead of always fighting the hazards of agriculture. Later on, with the passage of time, when the landlords become familiar with the conditions of land and its environments, and the type of cultivation there, and when more tenants in the locality offer

their services, and competition grows, the terms are made stricter and the period of the lease shortened. And ultimately, this occupancy tenant becomes a mere tenant at will, (who could be ejected whenever the landlord liked), with his terms of lease shortened to an annual basis. Thus the peasant became a tenant through this process, first he falls into the trap of long-term leases and later on being unable to rise financially or materially or socially, he sinks deeper and deeper into the morass of tenancy, from which he is unable to get out even at later stage. From ownership to tenancy is a far cry, but the bait of the long-term leases tempts the distressed peasant proprietor. Though a procedural factor, and not the causative one, yet it accelerates the whole process and turns peasant proprietors into a tenant. Thus there are two well-marked stages the first one that of the peasant becoming the annual lease holder and subsequently a tenant-at-will. And if the legislation did intervene, the process was accelerated, for the landlord would never like the tenant to rise to the status of an owner.

Damages and Compensations Next arises the question of damages and compensation, which must also be discussed here in its bearing on the issues of tenancy, especially when the tenant wants to rise to the status of owner once again. Having made certain improvements in the land, and sunk some capital, he wants to rise to the status of an owner and/or be compensated for improvements, he has made in the land, but dispute arises in regard to the evaluation of the improvements, and the poor tenant may be forced to stay on the land, if only to reap the fullest fruits of his improvements. True, that some legislation may be enacted for compensating the tenants, but the legal procedure is often complicated, and one that needs money and expenses to be brought into motion, thus the peasant cannot afford due to the lack of financial means. Thus the peasant tenant has to be glued down to the land as a tenant. He is at the mercy of the landlord, who in his own interests, does not let him be released from bondage. The landlord also can present him with a counter bill for the damages to his land, equipment and stock during his term as a tenant, this becomes an insoluble problem for the peasant who has, therefore, to submit to the will of the landlord, or pay damages in order to buy a rise in status, of which he may not be sure after all. Hence, the peasant remains where he is, with the result that his status does not improve. This is another factor aggravating his serfdom. Legal help, (even though the laws are there) is too costly to be secured by the helpless tenant, who is unsure of any other results, emanating therefrom, except bitterness.

Alienation of Land. This factor has accentuated the problems of the tenant. The alienation of land means its transfer, the ownership of land is transferred from the peasant to the landlord. If absolutely restricted, it may stem the rising tide of tenancy, for the peasant unable to sell away the land, would have to remain peasant always. But the alienation of land has been going up, unrestricted. Consequently, the growth of tenancy has been rather pronounced. And whereas in India the alienation of land was restricted, it was for the the "non-agricultural" castes, with the result that the land prices remained low, and the bigger landlords have been eating away the smaller fish. And then the *benami* transactions have also been taking place. Non-agriculturists have been becoming owners of land, by proxy, thus by-passing the legal framework. This has been sad, indeed, but in the face of the modern ideas of equality and liberty, as prevalent in modern democracies it is rather difficult to discriminate as between "agriculturists" and "non-agriculturists" as also against intending purchasers of land. The fact stands that the sale and the transference of land has been proceeding apace and in an unrestricted fashion too, and this fact alone has been causative of the increase and multiplication of tenancy. The example of India is a typically representative case.

Land Values. Rise in land values is responsible for increasing the number of tenants. How in actual life did this come about, may be illuminating study. Some of the factors have been noted above: the craze of the new rich to acquire land in the countryside, and the modern enclosure movement. To these may be added the efforts of the landlords to enlarge their existing estates in order to exploit fully the new modern techniques. Other contributory causes may be noticed. The tremendous growth of towns intensified the demand for more and more land, for the purpose of construction; the expansion of towns was also to the same effect. This trend in urbanisation persists, with the result that land values are still rising. The expansion of industries and their location in the rural areas, was in no mean fashion responsible for the keen demand for rural land for industry, with the consequential rise in prices of land. Also the expanding means of transport and communication require more land for the layout of roads, railways and airfields. Again, the recent multiplication of the recreational facilities, with the attendant increase in the number of parks, playgrounds, and gardens, etc., has also led to a phenomenal extension in the demand for land. The pace of reclamation has failed to keep in step with all these developments with obvious consequence. Acquisition of lands and farms

by the State, for experimental and demonstration purposes, provide another clue to the mounting land prices. Added to these are the improving income standards, due to a wider employment offered to a larger number, this wider spread of income distribution has been, by itself, potent enough to raise, land prices.

The Inference Forces working for the increase of tenancy have been many and various. Tenancy, if applied for the right purpose and in the correct manner, may add to social good, otherwise it might be detrimental to the interest of both the tenants and the society. Human nature being what it is, tenancy is apt to prove harmful to social progress, in spite of theoretical advantages it is supposed to possess. The most important causative factor is economic progress, industrial and agrarian revolutions. But other causes must not be ignored, either. Accentuating factors have been the depressions and the instabilities of agriculture, and the defective land and agrarian legislation. But there are certain other factors, responsible for gluing the peasant tenant to his status: these include long-term leases, and the damages and compensations, attendant upon tillage. Assessing their relative importance, it must be conceded that the causative forces have been responsible for the institution of tenancy, but so imperceptibly have these forces acted on the social and the economic background that it was not possible to counter them, when they were at work.

Agricultural Relations This subject is connected with the one in hand. And it is proper to discuss the various aspects of the agricultural relations as they emerge from the changing land tenures. The question may be raised if agricultural relations are wholly dependent upon the complexion of land tenures. It may be stated that it is not the land tenures alone that determine agricultural relations, but also the debtor-creditor relations, and the social structure in the village community. But one thing that is apt to be forgotten is that the status and the position in the rural areas, is often coincidental with the possession of land. The landowner has a higher status in the rural hierarchy. The status of the tenant is low, for the land is not his, the status of the landless labourer is lower still, for he does not have even a piece of land to till. It is in this context, that agricultural relations emanate from the facts of ownership and tenancy. This is an important factor in rural sociology and has to be reckoned with in any analysis concerned with rural economy and agriculture. In this section are viewed agricultural relations from several angles. How do the relations transform themselves in the light of improvements, made in the conditions of tenancy? How do the community institutions have

bearing upon the type and nature of these relations? The questions of status and standard of living do also affect agricultural relations, and must be noticed in this connection. The emphasis would then shift to the landlord relations, and the personal adjustments made by the tenant and the landlord. In this connection, would arise the issue of the division of rights in the social setting. The twin questions of improving the status of the tenants and of reducing tenancy would also be thrashed in the light of the above considerations.

Tenancy and Improvements. A conscientious tenant would devote his whole heart to land, that he cultivates, and would be able to do better than the other landlords and tenants. This means the landlord tenant relations would be much improved. But these relations would tend to deteriorate, under share cropping its variation or an allied system. The tenant, who is able to produce more out of the same piece of land, can also give more to the landlord; this would definitely mean good relations. In this connection, the virtues of honesty and efficiency should be amply possessed by the cultivating-tenant, otherwise he would strain these relations. On the other hand, if the landlord is a non-participant, and does not care for the land, nor for its productivity and has a number of intermediaries between him and the tenant, the relations could not be on an even keel. And if, furthermore the landlord is hesitant to make improvements in land, being content to get his pound of flesh, his relations with an ambitious tenant trying to get the best out of the land, would also be very much strained. The aims and objectives of both the tenant and the landlord must be identically the same, or their relations would be disturbed. The tenant, in order to get the best out of the land, makes improvements for which he is not compensated by the landlord, the relations are strained. This is an unfortunate fact, but usual in the daily routine of farming. In case, the tenant wants to leave the land in disgust, but is recognised as efficient, and able to raise the productivity of the land and maintain it well, a selfish and evil-minded landlord may raise all sorts of hurdles in his way to raising his status to that of the peasant proprietor, he may present him with counterbill for "damages."

Community Institutions. If the institutions in a village are such as require the landlord to deal with his tenants in a mild manner and in a humane spirit, the relations need not go bad, but with the weakening of these local rural institutions, and with the spirit of individualism pervading the countryside, the relations as between the landlord and his tenant would deteriorate. In India, for instance, the rural community was quite powerful in the pre-British days, with the result

that the tenant was protected against exploitation by the landlord. The community could take action against the tyrants, but with the advent of the Britishers and their non-recognition of the village panchayat as an instrument of law, this institution decayed and decomposed, thus the only restriction on the landlords was removed by the emaciation of local institutions, and he began to tyrannise over the hapless tenants. Another aspect is that the community institutions also make it compulsory for the tenant to perform his obligations and duties well, on pain of excommunication from the village fold, this was regulatory of the tenants' duties. And then the day to day disputes need not be taken to law, they were settled by the persons who knew intimately the local conditions and were always locally available. This meant that the disputes were amicably settled away; consequently, the differences did not mount up to the explosive point. Thus village autonomy, in this respect, did not let agricultural relations worsen and explode. Thus community institution also assured to the tenant continuity and permanence of tenure (a permanent stay on land) and security of livelihood. Assured of these, the tenant was less likely to misbehave. Smooth relations on both sides were ensured. In the rigid social structure, everybody's place was already predetermined, it could not be influenced by one person being a landlord and the other a tenant; this fact served as a restrictive influence on the social relations and regulated them. Thus community institutions, as long as they were powerful, could keep the social relations on an even keel and did not suffer them to be disturbed in any manner. But with the introduction of modern institutions for the dispensation of justice, the local communities in the village did weaken quite much.

Standard and Status These considerations influence agricultural relations. Tenant's status and his social standing are determined by the nature and character of agricultural relations. If the lease is of a long term and provides greater freedom to the tenant there is less interference from the landlord, agricultural relations are happy. In short term leases, some loopholes might be left for the ignorant and simple tenant who may be upset by a certain adverse interpretation by the landlord, agricultural relations would be unhappy and strained. Thus the contract and the frequency with which it is renewed also shaped agricultural relations. And then tenancy is responsible for their nature and type. Hereditary tenants would not be disturbed as much as others for their status is fixed and honoured by generations of landlords and tenants and also by law. Similarly, the occupancy tenants, who could not only be easily ejected and whose rents could not be enhanced either,

enjoy special status and privileges, recognised by law and the landlords. In this case, too, the relations as between the landlords and the tenants are usually frictionless, for their regulation and the terms of the agreement are generally speaking based on custom and tradition. In the case of the tenants-at-will, however, agricultural relations tend to be strained, for they do not enjoy the protection of law but are at the mercy of the landlord; consequently trouble arises whenever they fail to fulfil the pressing obligations of the contract they executed. Thus status as enjoined by the terms of the contract regulates agricultural relations. Another point is the tenant's standard of living, if living standards are high, tenants would not brook any interference from the landlords, nor would they tolerate undue and unpleasant treatment from him; they might even go to law to defend their status and rights and the landlords, hesitant to do anything which might strain the relations as between them.

Landlord Attitudes. Much has been said above to arouse the suspicion that the landlord is usually the person who strains the agricultural relations; by his unsympathetic and inhuman attitudes to the tenants. But enlightened and humane landlords might avoid relations getting strained. Also the peasant-tenant might also by his wrongful attitude strain his relations with his landlord. Admitting for the sake of the argument, that the tiller adopts a wrong attitude, the fact remains that the resources of the tenant as compared with those of the landlord are meagre, hence, he dare not displease the landlord by adopting a wrongful attitude. Even if he fails to fulfil the terms of the contract, the landlord has always recourse to taking corrective action against him, so that this attitude may not pay him, and he would rather not adopt it, for if he did, things may be hot for him, both on the farm and in the village. Thus it is the attitude of the landlord that counts for much. In case, the landlord bears a good attitude to the tenant, and is ready to advance money to him and help him in difficulties, things need not take an ugly turn and the relations remain happy and healthy. But, if on the other hand, his attitude is not helpful, but very inimical to the interests of the tenant, the relations could not be for long happy; they are foredoomed and destined to be wrong. Another point is that with a progressive tenant, the relations often remain on an even keel, for he might adjust himself to the landlord, and his idiosyncracies

Personal Adjustment. Another factor of a similar character is the amount of personal adjustment which could be made as between the landlord and the tenant. This means that if the

two do not have the inflexibility of mind and attitude, they would be on cordial relations, but not otherwise. This is an elementary principle of human relationships whether in industry, commerce or agriculture. It may readily be conceded that attitudes towards humans relate and determine the nature of agricultural relations, this need not be proved, being self-evident and obvious. But it is also the attitude toward work, duties, obligations, and privileges that counts, for if this attitude is of a superficially casual nature, the result may be disastrous—surely human relationships would deteriorate, worsening the agricultural relations as between the cultivator-tenants and the landlord-owners. This point need not be laboured further, for apparently agricultural relations are shaped by the attitudes of the tillers/tenants on the one hand, and the landlords on the other. But important thing is the adjustment made to the environments in which they are mutually rubbing shoulders with each other. Personal adjustments determine the nature of agricultural relationships in the rural sector. In this regard it may be pointed out that normally the peasant does not like to move far away from the land he cultivates, for man is the most unwilling to leave his environment, once he has become adjusted and accustomed to it.

Division of Rights The division of the rights as between the landlord and the tenant is an important regulator of agricultural relations. Once the rights and (incidentally) the privileges have been defined, mutual good relations are assured. But in the state of uncertainty, the confusion spreads with the consequence that the infection pollutes the village set-up. The contract defines the division of rights and determines crudely the nature of the agricultural relations. If the division of rights, whether defined or conventional gives greater privileges to the landlord, at the expense of the tenant, there would be trouble in the rural sector. But if the division of rights is based on justice and equity relations do not get strained. And the lease, the terms and the manner of the payments must be clearly defined to avoid loopholes, while on the part of the tenant, there must be the guarantee that the rent is paid. The agreement must be enforced, and provision made for alternative arrangements, in case either party fails to carry out its terms. And the lease must be not so rigid, as to be wearisome to both the parties or either of them, on the other hand, it should be such as to provide for all foreseeable eventualities, provisions for renewals and termination of the contract are also among the most important of the division of rights.

Social Factors The part played by the social factors in agricultural relations need to be considered to assess correctly their nature

and the character. The social fabric of the village and also its strength, as against other forces is of paramount importance. It may be pointed out that this factor shapes social relations; and in this context, agricultural relations are also a variety of social relations. Social factors determine the pattern of the social aspects of agricultural relations. In a caste-ridden society, such as in India, social relations are pre-determined, with the result that agricultural relations follow the same pattern approximately. If the caste and the communal relationships are smooth and happy, agricultural relations are also happy, but if inter-caste and the inter-communal relations are not happy or smooth, agricultural relations get frictional. India could afford several examples where communal and inter-religious relations were happy and the agricultural relations too, were not strained; while during the days of the communal riots, the agricultural scene was surcharged with misfortunes, and mishaps.

Uplifting Tenants. How to improve the lot of the tenants? There are mainly two agencies for this purpose. Landlords could take steps to uplift the tenants, and also the State. With a good gesture from the landlords, agricultural relations may considerably improve, while if the State intervenes, the efforts of the landlords are usually, directed to bypass and evade laws, whose implementation may impose some financial burden on them; the result would be that agricultural relations remain unhappy. It has been the experience of agrarian legislation that with the intervention of the state in the rural sphere, agricultural relations take an unhappy turn and become strained. In case, the landlords assume a correct attitude to improving the lot of the peasant, there result improved agricultural relations, for no peasant disregards this gesture of good will from the landlords, while if the state assumed on itself the burden of correcting the landlord and guarding the interest of the tenants, there may be trouble for both, in that mutual goodwill is shaken.

Reducing Tenancy. Difficult is this problem for the agricultural reformer and the economist to tackle. Still there is the desirability of eliminating the institution of tenancy. Its evils weigh heavily on the body-politic and also strain social structure especially in rural areas. In the light of these considerations it is desired to bring an end to the institution of tenancy and to raise each farmer to the status, that he rightly deserves, the status of own cultivator. In this regard there is confusion of thought, for with the greater intervention in economic affairs there is often greater dependence on the

State for help. The State could, by nationalisation of land, convert the private tenants into *public* and *state* tenants. But if redistribution of land were effected there would be this difference that tenants can become cultivators and owners. Another point is that the reduction of tenancy depends on the size of the producing unit and the total land that is available for 'tenants'.

Tenancy and Economy The increase of tenancy has been due to several causes. Agricultural relations depend on the actual working of the institution of tenancy. Though a form of the tenancy and its outcome, these relations are shaped by the forces that operate in the rural sector. A wide variety of circumstances are responsible for the formation and the crystallisation of agricultural relations. The character and origin of the improvements affected both in the agricultural system and the lot of the tenants determines to a great extent the nature of the rural relations. The other important and notable determinants and influences include community institutions, the status of different classes in the village, rural attitudes and the types of the division of rights as between the tenant and the landlord. The argument is that the institution of tenancy is the seamy side of the village society and needs to be eliminated, if possible, or, at least, the status of the tenants raised.

Leases and Lessees This section completes the picture, left unfinished, above, where was dealt the problems of agricultural relations. A description of nominal tenancies, like the freehold, shall precede a description of the others, which are of a suggestive nature. Tenancy, if it is to persist, must be such as is progressive and ensures the elevation of the rights of the tenant ultimately giving him a foothold in life independently of the landlord. This is what the aim should be rather than complicate the whole issue by means of hasty and ill-calculated legislation.

Main Forms The main forms and types are the freehold, the improvement leases and the conditional ones, the permanent and perpetual leases and the restricted types. All these leases are not widely practised, but important, from the dynamic angle. The modern trends will be noticed in a brief outline of the efforts for the improvement of tenants and the elimination of this institution, ultimately. The main forms of the leases have been classed from this special point of view, viz. the angle of reform for the tenants and of uplifting their status.

The Freehold. It is a long-term lease, in which the tenant enjoys tenancy for his life-time. This variation has been prevalent in England successfully. This system could be traced back to the Domesday Book. The tenures were for the tenants life, with the result that he could fully benefit from the improvements that he made in the farm, even the permanent ones. Thus long leases were desirable both from the point of view of the tenant as well as from that of the landlord, as both were able to reap the fullest advantage of the improvements. It was claimed that the long, long leases were working to make the tenants rather independent, and the fear entertained by the landlord was that the tenant might quite exhaust his land. With rising prices the landlords did not get a higher share. But mostly his fear were unfounded, and the system be commended from the tenant's point of view. It may therefore be suggested that the freehold, without any conditions attaching to them and with long, long terms of lease, were solving the tenancy problems, but conditions began to be imposed and *improvement and conditional leaseholds* appeared.

Improvement Leases. The problem before the landlord was that the tenant may not leave the farm in good condition. Improvement lease came to the force; and were increasingly adopted. The essence of the lease is that it may be of long duration, but the improvements made by the tenant are clearly defined and the farmer-tenant has to abide by them, so that the land does not get exhausted, by the end of his tenancy. Remuneration was granted to the retiring tenant for all his investments which had not been reaped to his fullest and completest advantage. The tenant could farm as long as he pleased, and he had only to conform to the terms on good husbandry. This system, which was popularly known as the "Yorkshire System" was adopted in preference to the above, which was termed as the "Norfolk System", for it was considered that it stopped the deterioration of land. It claimed to protect the rights of both the tenants and the landlords, for the lands were prevented from getting exhausted, and the peasant tenant given full compensation for improvements made in the land taken on long lease.

Conditional Leases. In fact all leases are conditional, and no lease or agreement is exception to imposing conditions on both the parties. Still, the *conditional leases* were those which imposed such conditions on the leaseholders as were obligatory on them to fulfil, before they could be retained on the land. Special conditions may include the payment of rent at certain specified times; and the cultivation of the crops at the dictates of the

landlord who may also insist that produce be supplied to him at a certain fixed rate, this is to ensure regular flows to his own stockists or factories. But pronounced are definiteness of the terms of his lease, which, if oppressive, would neither be accepted, nor recognised by the State. In this particular mode of drawing up the lease, the main consideration is that of protecting the interests of the landlord and his lands. Normally these leases are of a medium duration and so designed as to retain the fertility of the land. But nothing definite could be said for much depends on the terms contained in the bond. If the conditions were not equitable to the parties, they would not honour the contract, for the tenants are conscious of their own privileges and rights now as never before. The terms may be perfected in the light of the past experience and it may be to the slight advantage of the one party as against the other that depends on the conditions of the supply and the demand of tenants, for if their supply is greater than the demand for them, the term and the conditions may be to the disadvantage of the tenant, while if the demand is keener than their supply, the terms would be to the slight advantage of the landlord.

Permanent and Perpetual Leases: In this paragraph are reviewed the permanent and the perpetual leases in the light of the considerations advanced above. Permanent leases are granted to tenants for initiating the reclamation process, in a certain area, this would be to the advantage of the national economy and is, therefore, desirable from all points of view. Permanent leases, often, the state grants, hence the terms imposed by a truly welfare state are not hard on the tenants. This type of lease may be verily described as the *nominal* one, keeping in view the terms of payments and rents that have to be paid by the tenants. Alternatively termed as the *life-long* lease, that is only renewed at the death of the tenant where all contracts stand cancelled. It may be safely suggested that this type may also be adopted in all those cases, where the system of landlordism is being abolished and replaced by the nationalisation of land. Hence this goes far in ameliorating the conditions of the tenants, and improving their lot. By enabling the "tenant" to reap the full benefit of all improvements that he effects in his lands he is provided an incentive to cultivate and utilise his land to the best without in any way inflicting any harm on the same. Economists recommend these leases to enlightened authority, for this lease virtually makes the peasant tenant the peasant proprietor of the lands that he leases. But it may be pointed out that probably there may arise difficulties for an administrative authority.

Restricted Leases. In this case the lease is restricted to a certain terms of years, and may not be renewed there; after it may also be *restricted* as to person with whom the lease has been executed and may not be preferred to others; and lastly, it may be *restricted* as to terms and privileges enjoyed by the tenant: all these restrictions may be rather pronounced. Restricted leases do not improve agrarian relations, which are thus founded on suspicion and without a sure and stable ground to thrive upon. Hence, the trend of opinion is against them, which may therefore be eliminated in the near future. They import into rural relationship a negative feeling and initiate mutual suspicion for both the parties, hence are not favoured. It may also be said that the restrictions, they impose, are mostly on the tenant; these restrictions need not be considered as "conditions" of the lease. (These are not conditional leases). The point of difference lies in that the conditional leases impose certain conditions on the parties, who enter the contract and sign the agreement; these conditions have to be obeyed if the lease is to continue; but the tenant is free to have the operational side of the farming business to himself, apart from conditions imposed upon him in regard to the payment of the rent and the times at which it is to be paid. In the *restricted* leases the functions of the tenant are circumscribed by the landlord who may not leave the operational side to the cultivator; in these leases the stress is on the conditions, imposed not in respect of the payment of dues, but in respect of the persons who enjoy the rights of the cultivation, in respect of the crops and the lands that he may cultivate and with regard to the privileges and other rights that he may enjoy. To repeat, restricted leases are not conducive to the establishment of good agricultural relations and may not improve matters; instead, they may bring about a deterioration in these relations especially when the tenant transgresses the limits imposed and the bounds that he must not cross. Trend is to their eradication though restrictions may still have to be imposed in the interests of the society and for general economic welfare. For instance, it may be provided in the lease that the certain crops only be cultivated and to this end, the cultivator-tenant may find the lease as being restrictive, but the purpose may be to enable him to use land in the best possible manner, and that may be for the social well-being and the general good of both agriculture and national economy.

Modern Trends. Difficult it is to say with any amount of precision what the modern and recent trends in the sphere of tenancy are, for the world forces are registering a very rapid change and it is well-nigh impossible to follow them, let apart

analyse them and trace them in the secular sense. Still, it may be said in general, that the trend seems to be towards the elimination of tenancy, which is regarded as working itself to the detriment of the peasantry and sowing the seeds of discontent among them, and also is iniquitous for everybody. Thus the way of looking at the problem is that of improving the system by evolutionary methods for drastic measures may lead to frustration and may also let loose such forces as may bring chaos in the country and further aggravate the problem, instead of solving it. It is, therefore, suggested that the problem may be attacked in stages and if possible by the method of compromise. Legislative measures have failed to register improvements, that it was thought, they miraculously would, for necessity knows no scruples and the tenant and the landlord conspire together to set at naught what an enlightened government sought to do for the welfare of the peasants. In fact, in the advanced and mature economies, the landlord has failed to maintain and keep his estate in an efficient state of good repair, because costs have risen and a larger part of the income of the estate goes to the tiller of the soil. The result is that the tenant, protected as he is by law, also does not effect improvements nor does the landlord who is rather disappointed with returns from land. Land is getting depleted of its resources and is falling to that stage where it would be completely exhausted of its natural fertility. With greater state "intervention", the incentives of the landlords in maintaining the land have faded away with very injurious results for the national economy. Land is not cared for by the landlord, both because of the mounting costs of maintenance and also because of his lagging interest, it is not cared for by the tenant because it is not his land. Thus the national interests suffer, for the effect of land legislation has been to weaken the interest of the landlord in his land, while the legislation has not been so revolutionary as to confer upon him full ownership rights, for under a democratic constitutional set up, compensation also raises important complications which are rather difficult even for the State to solve. In India, a different method is being tried (and is proving successful) this is the Bhoodan movement, to which just a passing reference may be made. The good and the noble sentiments of the landlords are appealed to with good response. Landlords make contributions of land, for distribution of the lands given by them as gifts, and the problems of tenancy and land hunger are being solved in this manner. Critics have pointed out that the gifts are of those lands which are barren and useless from the cultivation point of view. Be that as it may, the fact stands that the spirit is infecting the countryside.

and the attitude of the landlords undergoing an excellent change with the result that the tenants are also getting rid of their serfdom and owning lands, on perpetual terms. This is the way of persuasion that needs be noticed here, and adopted by legislators and reformers.

The Perspectives. Viewing the above analysis in its proper perspective one finds that out of all the leases lifelong terms were the best and beneficial to the farmers and the national economy. But it may also be pointed out that after several experiments in the field of tenancy and its restrictions and reforms it has been observed that the only remedy is to eradicate it quite and replace it by owner cultivation, for it is iniquitous and often results in unpleasant agricultural relations, which from the social point of view are explosive for the society. In the prospective view (the dynamic angle) the remedy appears to be to wipe out the institution of tenancy. It is especially true of the backward economies, where legislation has not been effective either; for the pressure of population on land is so heavy that competition among tenants has grown very keen, with the consequence that various pieces of legislation are treated as dead letter. Both the peasant-tenant and the landlord-owner have often conspired to break laws and set at nought the enlightened efforts of an enlightened legislator and the well-intentioned statesman. In the overpopulated backward economies, the lot of the tenant has progressively deteriorated. The condition of land has been worsening rapidly, and in these economies, at least, the most neglected factor has been Land, which has neither been cared for by the landlord (who reading the signs of the times, thought that it was no use investing in what one day, might pass out of his hands), nor by the tenant, who had neither the means nor the desire to improve the "landlord's" lands. Thus land has been progressively deteriorating till it has well-nigh reached a state of exhaustion. Therefore, it is advisable that land may be saved from the impending ruin (if only in the national interests) by undertaking some means for its maintenance and upkeep that it deserves as an important agent of production in the agricultural economy of a country. With this end in view, the one aim should be to eliminate the institution of tenancy, for it has deteriorated quite out of recognition and could hardly be amended, except by persuasion if at all, as in Bhoodan.

Summary. Above is surveyed an important field of Agricultural Economics. Different implications of the terms "land tenures", "agricultural relations", and "tenants" were brought out. How ownership and tenancy could be divorced

from one another and how one did not depend on the other, except remotely was discussed. The mutual relations as between the landlords and the tenants were also thrashed. Next was drawn pointed attention to the various forms of land tenures, the copyhold tenures, the leasehold and the corn rents. Also a description was given of the several types of share tenancies, as set in comparison with cash ones, this discussion tended to favour the former as against the other forms. Tenancies from the American continent were also imported into this discussion, as they were regarded important forms relevant to this analysis. In the next section, attention was focussed on the economic implications and aspects of the tenancy problem. It was with a review of the tenancy problems and the tenancy forms that the next section was initiated. And the economic angles were brought to bear upon this discussion. It was amplified in the light of the pros and cons of the tenancy systems, that the advantages were more or less of a theoretical import, while the disadvantages prevailed in practice. In this context did the discussion about the economic aspects of tenancy follow. Increase of tenancy and its more important aspects were analysed and given their due place. Among the various causes that were noticed were those which pertained to the impact of industrialisation and its after-effects, on the rural society, in what manner do the depressions and the instabilities of agriculture influence in multiplying the number of tenants effectively. Several farmers having been discouraged by the instabilities of income and the fluctuations therein, left their farms, sold them away and preferred to become tenants instead. Defective tenancy and agrarian legislation brought about an increase in the number of tenants, whether by causing the restriction of credit facilities, or by the over-regulation of the tenant landlord relations, consequently increase in tenancy was registered in the rural sphere. Also were noticed other baneful aspects of defective legislation, which seems to have created more problem than it set out to solve. Long-term leases were in the course of time transformed into annual leases, with the result that once the tenant was trapped it was not possible for him to remain at that level, he was soon made a tenant-at will having to renew his lease every year. This process was further accelerated by the well founded fear of the landlord that legislation might try to raise the status of the tenant making it impossible for him to be evicted if he enjoyed a long-term lease.

Another force, making for his tenancy, is the complex question of compensations and damages, which might pin the tenant down to whatever servitude was offered by the landlord.

and whatever circumstance of tenancy he had fallen into. The landlord, being unwilling to compensate the hapless tenant for the improvements he might have made in the land, presents him with a counter bill for the "damages" caused by the tenant, the objective being to reduce the peasant to a servile status. Alienation of land, and rise in land values have also been forces working in the same direction. In this matter, attention was focussed on the operation of the restricted, as well as the free alienations of land, and it was found that restricted alienations were more harmful, and effective in increasing the numbers of tenants, than the unrestricted ones, which only acted through raising land values. The sudden and meteoric rise in land values, following certain socio-economic factors, operative in the society after the industrial and the agrarian revolutions, also worked in the same end, and this rise in land values was "utilised" by the peasant-proprietor to convert his land into liquid assets; thus he became a tenant instead of remaining a peasant proprietor. In the next section were delineated various agricultural relations in their proper setting, and the causes, at work, were found to be many and varied. In the fore were those that arose out of community institutions, division of rights, social setting and non-economic factors, like social attitudes and adjustments. Towards the close of this section were suggestions made for the reductions and elimination of the institution of tenancy and also for the improvement of the status of the tenants. This analysis was rounded off by a description of the various types of leases, such as the freehold, the improvement type, the conditional leases, the perpetual forms, and the restricted leaseholds. It was found that some of these leases might go far to improve the conditions of the tenants, for various economic reasons outlined above. In brief, it may be stated that the conditional and the restricted leases tend to darken the agricultural relations, whereas the freeholds, and the permanent and the perpetual types strengthen these bonds.

Conclusion. It may be said now, that earlier the institution of tenancy is finished, the better it is for society and its economic and agrarian interests. In the first instance, it was concluded that the problems born out of tenancy were those relating to land, agricultural relations, and distribution of land and wealth. All these problems are of an important and intimate bearing as far as the national economic welfare is concerned. And it was also conceded that the various phases of tenancy are on the increase, because of the impact of several socio-economic forces acting and reacting on the body politic and the rural canvas. Secondly was

noticed the impact of tenancy on the quality of land which tends to deteriorate as a result of this institution and because of the attitudes of the tenants and the landlords towards the upkeep and maintenance of the quality of the land. Thirdly while there were certain forms of tenancy that did not strain agricultural relations there were certain others that did rupture these—on healthy relationship life in the village depends as also other social and sociological factors making for progress and improvement in the countryside. Thus in the interests of the rural reconstruction movements and national economic welfare the cordiality of good agricultural relations must be maintained. Fourthly was noticed the fact that the distribution of land (and what is more important) the distribution of wealth and income in the rural society tended to concentrate because of the institution of tenancy. In fact the social inequalities tended to get cemented with this institution. Thus in the interests of social equality and rural betterment the irresistible conclusion is that an immediate end be put to this institution. Fifthly, the tenants tend to remain tenants, due to the inexorable operation of certain forces and devices ingeniously set into motion by the landlord whose interest is to retain the tenant in servility perpetual and permanent. The effort of rural reformer should be to bypass these devices and nullify the various forces released by the landlords. Sixthly, the tenancy system does not ease the situation with regard to the distribution of land for lands concentrate as between few farmers, who lease it among their tenants and sometimes the lands are also left unleased. This means that the system does not satisfy land hunger for a larger part of the population. Seventhly, the burden of the population on the land is heavier in the case of tenancy than in peasant proprietorship for under the former the number of the intermediaries grows large with the result that all of these intermediaries are maintained out of the produce of land the share of the poor tiller of the soil is the lowest possible. Eighthly the incentives in the agricultural system are also lacking because of tenancy for the peasant tiller-tenant gets practically nothing for his labours and also because even under the best form of tenancy, the interference of the landlord or his agents dampen the enthusiasm with which the tenant might have started tilling operations. Lastly this is a social menace and calls for eradication.

CHAPTER XXIII

DISTRIBUTIVE ASPECTS

Introductory Distribution and Production : The National Dividend : The General Theory of Distribution : Functional Distribution : Personal Aspects : Application to Agriculture. Rent and Agriculture. The Concept. The Ricardian Theory : Critical Appreciation : Differential Advantages : Situation and Fertility : Growth of Population : Rent and Quasi-Rent. Unearned Increments : Transfer Earnings. The Modern Version. Dynamic Aspects. The Inference Profits of Enterprise. Difficulties of Definition. The Farmer-Entrepreneur. Rate of Profits. Theoretical Explanations. Profits in Progress. In Perspective. Wages and Labour-Methods of Wage Payments. Fixation of Wages. Wages on the Farms. Custom and Competition. Wage Incentives. Regulation on Wages. Agriculture and Industry. Progress and Problem. Critical Assessment. The Rate of Interest-General Considerations. The Classical Explanation. The Modern Theory. The Agricultural Setting. Demand and Supply. Interest and Investment. Prospective Angles. Aspects of Distribution-Rent and Profit. Wages and Earnings. Implications of Interest Charges. Miscellaneous Incomes. Limits and Exceptions. Summary and Conclusions.

In this chapter are set the various aspects of the problem of remuneration to productive factors. The problem of distribution has assumed a special significance in Agricultural Economics, because it is on the plane of Distribution that the levels of income are determined. In the field of Applied Economics, the distributive aspects concern the social structure. The inequality of incomes as between different classes, in agriculture as well as in all the other spheres of industry and commerce, is due to a defective distributive process. The discussion starts with an introductory survey of the Theory of Distribution and the elementary concepts pertaining to it. Later, attention is drawn to its application to agriculture. In the theories of Rent, stress is laid on the Classical, Marshallian and the Modern forms of analysis. Profits are discussed next, for the simple reason that all earnings, the agriculturists regard as profits : the functions of the farmer-entrepreneurs are explained to find out how the rate of profits is determined. *Wages* have a place in this analysis and the endeavour is to appraise the theories of wages in the light of custom and competition, progress and incentives. The determinants of the rate of interest (which is of paramount importance to agriculturists) are underlined next, especially in the agricultural setting. A review of the several aspects of distributive problems is attempted in the last section, which, while offering certain explanations, also defines the limits. It is not claimed that this analysis is exhaustive, but the effort has been to diversify it as far as

possible and to bring it as near to reality as is humanly possible. Still, it may be stated that in an agricultural analysis, perfection is unattainable.

Introductory In this section is given a bird's eye view of the theoretical basis of Distribution. The relationship between production and distribution would be underlined here and followed by an explanation of the general theory of Distribution. The problems of the Distribution in respect of national dividend are also studied here. A distinction is drawn between *functional* and *personal* distribution, for both are relevant in the sphere of Agricultural Economics. The section is rounded off with a review of the problems in the perspective of Agriculture. The problem of distribution is concerned with *three* main issues: what is to be distributed? among whom is the same to be distributed? And finally, who is the distributing authority? To these queries, the answer is clear. It is the national dividend that is to be distributed among the productive factors, land, labour and capital, and the distribution takes place by itself, that is by forces economic. In refinement to the above, it may be pointed out that the distributive agency in agriculture is *custom* rather than competition for the agriculturist is the product of his environment. To this threefold inquiry is added another, is the system just? And the modern problem in Distribution revolves round it.

Distribution and Production It may be said categorically, that productive enterprises would not be undertaken if the national dividend were not distributed to productive agents. If to the productive factors did not accrue the rewards for their work in the productive process, they would not participate in the same. Hence motivation to the act of production comes from distribution, this point is too self evident to be laboured at length. That is why this problem immediately follows that of production. The productive factors are to be paid for their efforts and share in the productive process. The distributive process is functional, that is, according to the functions that the productive factors perform. The division of the national dividend (to be defined presently) takes place among the productive factors and not among persons or individuals. This is so far as the theoretical aspect goes, but in the realm of practical agriculture, it is personal distribution that gains predominance over the functional, for neither does the farmer bother about the intricacies of the theory, nor does he think of the share of productive factors, except in personal terms. He accelerates his productive efforts if he is sure of higher remuneration. This remuneration is profit on the enterprise or the wage for the labour that he puts in but the fact is that he concerns himself

about the total remuneration he gets. Supposing, he hires productive factors, he has to pay for that, this charge is governed by the share of these productive factors to the enterprise. The productive apparatus could be enlarged if the outlook for remunerating the productive factors is bright, otherwise the enterprise may shrink, or at least not expand. The limits to the expansion of the farm enterprise are set by the nature and amount of his earnings which are limited by the nature and character of distribution.

The National Dividend. This concept was fathered by Professor Pigou, who defined it as the *objective income* measurable in terms of money, included in estimating the national dividend. This means that the services that one renders to oneself would be excluded as also the honorary work and free benefits and charities. Paradoxical, as this definition is, it may be accepted in the absence of a better one. National income may be broadly said to include the income earned, the income received, the income produced and the income spent. In the Marshallian sense, the national dividend is composed of the net aggregate of goods and services, material and immaterial, which have been produced by economic effort. Without entering into controversies about the true and correct concept of national income, it is worth having a general idea about the *national income* and the *national dividend* in order to grasp the essentials of the general theory of distribution, with special reference to the Economics of Agriculture. National dividend is the source of payment for all productive agents. It is not produced and then accumulated, and then distributed; all these three acts, production, accumulation and distribution are simultaneous, and not successive. It is the purchasing power that is distributed among productive factors, in the form of rents, wages, profits and interests. Productive agents are being constantly paid and the national dividend distributed. A word about the calculation of the national dividend. There are three methods for its calculation: the *census method*, the *income method*, and the *occupational method*. The *census method* calculates the value of all annual produce, industrial, agricultural or any other type. Some allowance is made for depreciation, wear and tear and replacement of assets, as also for the use of circulating capital in the form of raw materials, machinery and soils and mines. It is difficult to assess the exhaustion of the natural forms of the national wealth. The *second* method consists in adding together the incomes of individuals. This is considered more reliable for the estimates are made by conducting sample surveys of incomes of typical families. The *third* method is that of the occupational census, by which the earn-

ings of all the persons employed in different and several occupations are taken into account. A sample income is taken into account and this average earning is multiplied by the number of those engaged in the profession and the occupation. It may be pointed out that what one has to guard against is the danger of double counting, for if the same income is counted twice an inflated calculation which is not correct is made. Also it is rather difficult to guard against this danger, for the possibilities of slipping into double counting are not remote. From the agricultural point of view, the calculation of the national dividend is of paramount importance to the planner and the administrator, for the aim of national development is to raise peasants' living standards. The national dividend is the pool from which peasants are paid the shares of the different productive agents determined and the functional shares of different farmers carved out.

The General Theory of Distribution To unravel the main features of the general theory of distribution, the principle of substitution has to be invoked. According to this principle, the producer so consumes his agents of production that he enjoys equimarginal returns. As pointed out earlier, he goes on substituting one productive factor for another till the marginal productivities of different factors are equalised. This combination the optimum one yields him the greatest profit. Marginal productivity is addition made to total productivity by the additional unit. It is the productivity of the marginal unit one which it is just worthwhile to employ. At the margin of employment, the payment made to a particular productive factor is just equal to its productivity, for reasons which have been explained above. It may also be pointed out that the act of production is continuous and marginal productivity could not be measured in isolation. The productivity of the marginal unit is influenced by earlier units which have been in employment in the productive process. The act of production is the result of the combined and the co-operative efforts of the factors of production. Thus marginal productivity is measured by the increment that a particular factor of production makes to total production by its employment. It may be stated here that the general theory of distribution is based on the marginal productivity explanation of production. The remuneration paid to a particular productive factor could not exceed its marginal productivity, for if it did, there would be loss on this account and that no business man would brook. The supply of the factors of production is distributed in such a manner that their marginal productivities are equal in all uses. It is assumed that the productive units

are homogeneous and that the inter-substitution as between the productive factor is also possible. Thus in equilibrium, the marginal productivities of all productive factors is the same in all employments and the marginal productivity of each factor is equal to that of any productive factor. And the reward is measured by the remuneration paid to each productive agent; it is just covered by their marginal productivity. Over the economy as a whole the productive factors tend to be paid in accordance with their marginal productivities. This principle underlines distribution. But there are certain assumptions that underlie the theory. In the first place, to suppose that productive factors are homogeneous, is not very correct, then inter-substitution of productive factors, as assumed in this theory, is also not so much of a practical possibility especially in the agricultural sphere. Sometimes the costs of additional units could hardly be calculated with precision, as for example, the personal and the family labour of the farmers. In the sphere of land, especially, perfect mobility of the factors of production, as assumed in the theoretical framework exists only in an ideal situation. The most important assumption is the law of diminishing returns, which does not operate in agriculture, but efforts are being made to nullify it. Still the theory holds good broadly speaking.

Functional Distribution. It is functional distribution that is outlined and accepted by economic thinkers. By functional distribution is meant the distribution of the national dividend according to the functions that different factors of production perform; for instance, the functions of capital may be performed by a farmer trained in the arts of production; a part of the wages that he gets is of the nature of *rent of ability*. It is the functions that are far more important than the factors themselves. And it is difficult to assess the exact remuneration of each productive factor taken by itself, for that would be a tedious process, and one governed by individual differences between productive factors. It may be pointed out that individual variations in the productivity of individual factors persist prominently. Thus the principles of distribution are related to its functional aspect. It is far easier in the sphere of agricultural activities to relate the theoretical framework to the functions of the different productive agents, rather than to the innumerable factors of production employed in agriculture. It is not difficult to grasp this principle for it is more convenient to make calculation in terms of functions rather than in terms of numerous individual productive factors in production. Distribution is, therefore, mainly functional as far as theory is concerned.

Personal Aspects But there is the personal aspect, too. In fact, it is the *personal* aspect which is more relevant in practice than the *functional* one. The farmer in particular is not much bothered about the functional aspects of the various agents of production that he employs, he is rather more worried about the individual aspects of the same. For he has to pay the landlord, the creditor, the labourer and the firm from where he borrows or buys the equipment. Thus his concern is with the personal and the individual aspects of farming business. Personal aspects mean that the farmer is paying not the agents of production but the persons who own the same, and in this respect his concern is not with the functional aspects of the agents of the production. He gets an income, which, to say the least, is composite, and in this matter, he does not distinguish as between the various aspects of the same. What payment is for rent or for wages or for profits or for interest charges in the investments he has made does not pose a problem for him. His concern is with inflating the whole composite income as much as possible. Similarly the other charges on the farm are also composite and it is very difficult to disentangle the several constituents of the same, even from the theoretical point of view. Hence it is, that the view is held that a functional explanation of the remunerative aspects of the agents of production is more or less of only theoretical and of very little practical utility. It has to be maintained, however, that this theoretical set up is to be understood as a preliminary to the fuller understanding of the all important subject of agricultural incomes, the disparities in the agricultural set up and the personal aspect of the distributive problem as in farming.

Application to Agriculture In the preceding paragraphs were noticed the main points of general theory, but in this paragraph, the theory is applied to the field of agriculture. It may be pointed out that this application of the theory has a limited scope for the fact is, that assumptions do not strictly hold in the field of agriculture. Without trying to repeat the arguments advanced above, it may be pointed out that in agriculture more than anywhere else, the co operative effort of productive agents is quite indistinguishable, and it is not possible to find out precisely the share of each factor in the productive effort. In the sphere of industry, it may be possible to know roughly the contribution of each factor, by the methods of margins, but in agriculture so composite is the productive effort and so compounded it is of the efforts of the different agents of production that it is well nigh impossible to extricate the one from the other. And then the theory is based

on the concept of margins, and their working. The *marginal* contribution (*marginal* productivity) is that of the *marginal* unit. But in the sphere of agriculture, in particular, it is not possible to withdraw a marginal unit, say, of land, without upsetting the whole process. The loss of productive effort would be huge and inestimable to the farm enterprise. The measurement of the *net marginal product* presents another difficulty, for there are *economies* operative in agriculture, as in industry. To assess correctly the marginal productivity of a single unit in isolation is difficult. Farm productivity could not be measured apart from the combined efforts of the units of production. And then it is hardly practical to alter and vary the proportions of the combinations of productive units without disturbing production as a whole. This is a serious thing and one that needs reconsideration in the light of the above analysis. In agriculture, as in all other enterprises, technical requirements would not let the proportions of the factors of production be disturbed except at a cost to production on the farm. And then the infinite possibilities of the variations of the different units of production, as understood in industry, are more or less absent in the agricultural sphere. And lastly, it may be pointed out that as more and more of certain productive agent is employed, its price-cost relations are disturbed with the result that the same cost could not be operative as in the calculations, made in light of the theory of distribution. This means that the theory is limited in its application to the sphere of agriculture. Still, in the absence of any other accepted theoretical apparatus, it must be appreciated that this theory does provide us with an elementary account of the nature and the character of distribution in the sphere of agriculture. It must also be re-emphasized that the theory is a positive statement and not a verdict on the justness of the remuneration awarded to a certain factor.

Rent and Agriculture. The most important payment in agriculture, namely, rent is also the most basic one. Rent is so ancient and basic to the pursuit of agriculture, that it is regarded as the only charge on the farmer. This is attaching too much importance to rent and too little to other liabilities, e.g., wages and interest. In agriculture, even if the farmer owns his own land, he does stand to gain the benefit of not having to pay the rent which he would have had to pay, if he hired land. Thus rent does accrue whether the farmer pays it or not. This fact is significant in economic analysis and is taken account

of in theory The understanding about the theory of rent is important for making decisions about payment to the landlords This means that (from the standpoint of the betterment of generations of land workers and farmers) the *contract rent*, fixed according to economic principles, should not impinge hard on the farmers, nor injure their business, but if the payment is heavy, the effect would be quite adverse Rent is, therefore, an important concept in agricultural analysis, for it has a bearing upon the present state of agriculture, as also on its potential earnings

The Concept In everyday speech and in common parlance, rent means a periodic payment that is made for the lease of a certain piece of land, or any other form of property In this sense, rent would arise if a certain piece of machinery were hired and the payment for its use were of a periodic nature, but from the economic angle this payment would be of the nature of interest, for the piece of machinery is regarded as capital, which earns interest and not rent This is an important distinction *Rent is the payment made for the use of land.* But here again difficulties may arise, for the element of interest may also be there in rent, as commonly understood above It has to be pointed out, that in this context land may have been benefited by several investments and capital expenses sunk in connection with improvements therein, all payments would be of the nature of the interest This means that all those elements which are man-made have to be excluded from this view of rent Ricardo regarded it as a payment for the "indestructible and original powers of the soil" implying that the payment was for the original (not man made) properties of the land under cultivation But it is rather difficult for anybody however well equipped he might be, with all the theoretical apparatus, and trained in the arts of economic investigation, to disentangle the original from the man made properties and powers of the soil, for in fact all land has been brought under the plough by man Marshall saw "differential advantages" in Rent, while modern thinkers regard it as "transfer earnings"

The Ricardian Theory According to this theory, the rent of any piece of land is measured with reference to the "no-rent" land, which is the marginal land Ricardo thought of rent in the intensive and the extensive cultivation of land First grade paid a rent with reference to the land on the margin The marginal land, that land which just paid the expenses of cultivation could not afford to pay rent Ricardo took the example of the new countries, where the settlers had just arrived In the initial stages of their stay they would exhaust

all good land, the A-grade land, thus with the expansion of population they would have to till other inferior types of land, with the result that in the event of demand becoming intense for superior grades of land, these would begin to yield rent, which would be equal to the difference between the superior grades of land and the inferior grades as expressed in their productivity. Thus this process goes on as cultivation extends to the inferior lands, with the result that when this land is exhausted, rent begins to be paid for the inferior grades of land. There are also lands which pay no rent, for they are the marginal lands, in the sense that they are on the margin of cultivation. These lands are the base on which to calculate rent of superior plots. This is so far as the payment of rent in the *extensive system* is concerned. Under *intensive cultivation*, rent is calculated on the basis of the no-rent land, in the sense that this land is so exhausted that it could not pay any rent for that would be unremunerative. Calculating on this as the base, progressively higher payments are made for the better grades of land, until the virgin land is employed and the highest payment made for it, for it is the most productive. In this sense, rent is paid on the differences of productivity with reference to the last remunerative piece of land. And in fact, as is pointed out by Ricardo, the payment of rent is the resultant of both the intensive and the extensive systems of farming. The implicit and underlying assumption is that the superior lands remain superior and more fertile while the inferior lands remain inferior unable to produce as much as the superior lands could. Thus the Ricardian analysis is based on the acceptance of the concept of "the original and the indestructible powers of the soil". These powers of superior soils could not be destroyed by successive cultivation, exhaustion of the soil may occur, but not complete depletion of the original and indestructible powers. The differences in the superior and the inferior lands, being of a permanent nature, do persist. The assumption is that the first settlers (intuitively settle on those pieces of land, which are the most fertile and the best. With the increase of population the supply of the good pieces of land begin to decrease and the newer settlers are forced to go to inferior lands. Implicit is another assumption that the law of diminishing returns does operate on the farming system, with full effect.

Critical Appreciation. It may be pointed out that the Ricardian theory has not been accepted by a large majority of economists. Ricardo detected an element of scarcity payment in rent, he also appreciates the fact that the no-rent land may also be paying rent for the reasons of scarcity: he terms it

scarcity rent But the theory has vulnerable points. In the first instance, it has been repeatedly maintained that there are no original and indestructible powers of the soil. The better soils do lose their powers and the bad soils regain fertility and improve upon their original powers under proper scientific treatment. The advancement of science has made glass house culture possible, not to speak of rejuvenating bad soils and making them fitter than the neglected and exhausted ones. It is further pointed out that the original and indestructible powers of the soil are non-existent, all soil is man-made. But in defence of Ricardo, it may be maintained that the indestructible and original powers of land includes such natural gifts as air, sunshine, climate, etc. Another line of attack is that colonisers do not settle in the manner described by him, for they may be totally unaware of and unable to choose the best lands. Carey pointed out that they settled on the more accessible lands in preference to the most fertile ones, which they could not have located. This is an important point, and Carey refers to the importance of rent arising out of better situation. True, that Ricardo did not take account of the factors of situation and accessibility. Another objection is that the term "fertility" is not defined by Ricardo, fertility depends on the ability of the farmer and the productive methods used in the production and is relative to the crops grown. In fact, fertility is a variable concept and it changes with advances in arts of production. In Ricardo's days, the changes of increasing fertility were not immediate, for science had not attained such heights. Concept of the no-rent land is another vulnerable point in his theory, for as Ricardo himself is forced to admit, an element of scarcity may enter into rent and the no rent lands be forced to pay rent due to scarcity. It may be rather difficult to locate the no rent land, which theoretically speaking might exist in some other country. Again the corollary that the marginal land does not pay any rent, and that price is determined independently of rent payments is also not unexceptional, for in certain cases, rent does enter price. Still, it may be stated that, broadly speaking, prices are independently determined and rent has little to do with their determination. And there are economists, who think that there is no necessity of having to evolve a separate theory of rent, which they believe, is the resultant of economic equilibrium and is determined accordingly. In their opinion, the payment is fixed more by the special contracts which are made by the peasant, who decides to cultivate a certain piece of land and also rents it for his cultivation purposes.

Differential Advantages It was Marshall who improved

upon the Ricardian theory by saying that rent arose out of the *different advantages* which one piece of land possesses over another piece and from the margin upwards. In this sense, the marginal piece is without any differential advantages which give rise to the differential rewards, arising out of the unequal distribution of the special gifts of nature. The economic rent depends on the surplus output of one piece of land over another and the value of that surplus produce, too. To whatever factors greater output of one plot of land may have been due, is immaterial, for all these factors are grouped in "differential advantage", which might also cover not only fertility but also such other factors as greater accessibility to markets and raw materials, these reducing selling costs and other expenses. Thus economic rent depends on the degree of proximity to and accessibility of raw material and markets. It must be recognised, therefore, that this term is far more comprehensive than the "original and indestructible powers of the soil." Rent accrues out of several considerations, and Marshall very wisely grouped all these factors under "differential advantages", which one piece of land possesses over another. As already pointed out, in an earlier chapter, the efficiency of land is twofold, physical and economic. The former is measured by the physical output per acre, while the latter only refers to the money output of a certain piece of land. It may be stated that while Ricardo talked of the physical efficiency of land, it was Marshall who, by coining a new phrase, adverted to the economic efficiency of land, for he thought and rightly so, that rent was the outcome of the *economic* forces operative on land, as measured in terms of the money return. The differential principle explains why one plot of land earns a higher rent than another piece but it may be pointed out that even this fails to account for the emergence of rent. Why does rent arise? This question remains unsolved and unanswered by this differential principle. It is maintained that differential advantages explain the phenomenon of rent payment but only partially. Though an improvement on the Ricardian explanation, it fails to account for rent to be paid to the landlord whether that particular land is or is not gifted with differential advantages. Differential advantages also arise with reference to marginal land, but the theory does not account for the payment of rent for marginal lands. According to both the theories, lands, below the margin (*i. e.* those which do not ever cover the expenses of cultivation) need not pay rent and are likely to go out of cultivation; while the experience is that this does not happen, for the sub-marginal lands also continue to pay rent, even when they should not in the light of the theoretical analysis. Land may be sub-marginal for a certain commodity, and marginal with respect to another.

Situation and Fertility. Distinction should be made between the impact of fertility and situation with reference to the determination of rent. Fertility it was that Ricardo stressed in the matter of the determination of rent, while Carey emphasized the role of situation. Marshall who digested all that had been said before, emphasized both situation and fertility when he talked of "differential advantages". From the cultivation point of view, fertility is more important a determinant than situation. But it may be pointed out that despite the importance of fertility in this context situation does become significant when the farmer markets the produce as the farms, better located in point of situation are at a greater advantage than those which are further away from the market. In point of farming costs, too, the importance of situation is well realised in regard to the accessibility of raw materials and the implements of production, especially in a highly mechanised economy. Both situation and fertility play an equally important part in the determination of rent and it is not possible for us to attach importance to either. The difference as between fertility and situation may also be significant in one more respect. The advantages of location and situation may have already been realised, benefits arising out of situation are realised when farms are located. Hence rent is in this sense, the resultant of situation and fertility both.

Growth of Population. Ricardo placed reliance on the Malthusian Theory of Population, for he derived his law of rent from the same theory. When colonisers settled in a new country and population began to expand, only then did rent rise and emerge. But what if population did not rise as expected? Ricardo thought that rent would rise when the inferior lands were brought into cultivation as a result of the expansion of population and hence more pressing demands for food. Now this is a situation which might not endure in the modern world, it is not necessary that population expands so that resort may have to be had to inferior lands and then it is also not necessary that the demand for food might expand. The reason is that the growth of population has been controlled in the modern economies to the extent undreamt of by Ricardo and Malthus and that food habits have so undergone a change that agricultural supplies alone are not strained. Thus the prediction of both Malthus and Ricardo are falsified. The theories stand discarded now. Hence, the emergence of rent is solely due to the growth of population and the consequential increased demand for food may not be causative of rent, it is the demand for more and more land for recreation and allied uses that may lead to the emergence of rent. Rent, therefore, is the resultant of several factors.

Rent and Quasi-Rent. Though not so important from the point of view of agriculture, yet the distinction between "rent" and "quasi-rent" needs to be drawn, if only for clarity of thought. Quasi-rent is not a form of rent, but a payment which arises in the same manner as rent does. Marshall, who fathered this concept, pointed to relative scarcity also being a cause of rent; quasi-rent arises when a certain article or agent of production gets scarce, temporarily, the payment made for it is much above the normal and is described as quasi-rent. It is the surplus created by factors the demand for which has suddenly increased and which are not reproducible all at once. This surplus is only temporary and does not have any permanent significance for the economist or the agriculturist. The distinction between rent and quasi-rent is a function of time and of degree of production, for if durable goods which yield quasi-rent are not in shortage, the payment for them becomes normal and the quasi-rent disappears. The differential surpluses arise because they have become relatively and exceptionally scarce in relation to demand. But while the supply of land is limited in an absolute sense (?), the supply of these durable goods is not so, it is scarce only for the time being. Thus quasi-rent arises in the short period. No wonder, there is not much appreciation for this concept as the short period is indefinable. For the short period, quasi-rent may be regarded as the necessary profit; it does not form a part of costs, but ultimately it does. From the point of view of the agriculturist, the concept does not appear to be very helpful, for agricultural factors (which are durable in nature) could not be regarded as paying quasi-rent, and not interest or wages.

Unearned Increments. Since the publication of "Progress and Poverty" by Henry George, the concept of rent as an unearned increment has been quite popular; rent is of the nature of a *surplus* which the owner of land has not made efforts to earn. Rent, in this view, arises out of social progress with the expansion of the urban areas, the rent may arise in the case of lands in the suburbs, so far useless. Thus this surplus should justifiably belong to society and not to the individual concerned. Rent is a function of social development. But this concept, though visibly correct, is fraught with several difficulties of understanding. In the first instance, isolating the earned from unearned increments is difficult. And then there may also be negative increments, or fall in values when social decay begins to adversely affect a certain place. What about these decrements? And then it is pointed out that it is not only land, whose value rises with social change; unearned increments may also arise in the case of labour and capital. Modern

theorists refuse to accept the concept of unearned increments becoming rent, for the landlord has to balance different uses of land, and the emergence of the increment would depend on the type of the use made by him of his land. And lastly, this concept does not explain the usual circumstance of rent, when no unearned increment may have arisen. Still, the theory is valuable in that it focusses attention on the unearned land income which may rightly be claimed in taxes by the state as its due.

Transfer Earnings Attention may be invited to another concept which has recently become popular, and is primarily of use in explaining the income from land, so far regarded as rent. Transfer earnings cover all other payments made for the other factors of production. It is suggested that the means at the disposal of the community are scarce in relation to the demand for them. And that the endeavour is to put them to the best uses, for they are capable of alternative uses, with the result that the transfer from one use to another is not an uncommon phenomenon. Higher earnings attract the means of production to transfer themselves to another more remunerative use. In another industry, earnings may be most favourable. "Transfer earnings" are what a factor makes in the most remunerative use and for the best alternative. This concept is closely linked with the concept of economic rent, which is now explained in the terms of transfer earnings, the peasant devotes land to the best possible use, or discovers the best use to which it could be put. Rent is sometimes defined as the "excess of what any unit gets over its transfer earnings." This means that transfer earnings of specific lands is nil, for they could not be transferred to any other use with advantage. But it may be pointed out that the transfer earnings concept is useful from the practical point of view, for rents are determined as between the landlord and the tenant from the standpoint of the transfer earnings. A landlord, when letting out land to a tenant, takes into consideration the transfer earnings of that piece of land and fixes rent accordingly, all the alternative crops and enterprises are taken into consideration when charging rent, which definitely would be pitched highest possible.

The Modern Version In the view of the modern economists, the theory of rent is not quite necessary for agricultural analysis; it could easily be discarded. It is pointed out that the essential factors about the emergence of rent are relative scarcities of the plots of land and, that the land is gradable into different grades. But fundamentally speaking, rent is paid simply because the produce of land is scarce in relation to the demand for the same. Even if land were of uniform

quality, and not gradable rent would still arise. Similarly, even if land were not scarce, but its produce was, rent would arise, for the scarcity of land is derived from the scarcity of the produce of land. Hence, it is maintained that the rent of land accrues because of *derived* and not *original* scarcity. On similar principles, do the payments of wages, interest, and profits, arise out the scarcity of labour, capital and enterprise in relation to the demand for the same. In this context, a new light is thrown on the concept of rent, which is thus rendered superfluous. Thus rent need not be placed in a different category for it is determined by the marginal productivity principle, just like other payments. The theories advanced above, therefore are not complete explanations of rent and may be given up in favour of this contention. The scarcity principle may now be explained. The farmer entrepreneur endeavours to bring about the least-cost combination of productive factors, and increases productivity by combining and utilising the variable factors in increasing quantities. The price of the output just covers the marginal costs. Rent arises because of the operation of the Law of Variable Proportions. This concept does not distinguish between the remunerations of other productive factors and the rent of land. Rent also arises out of marginal productivity.

Dynamic Aspects. The behaviour of rent depends on the nature of economic progress, characterised by the advances in the methods of production, *i.e.*, the technique of agriculture and the improvements in the means of the transport and their extension; the behaviour of population and the concept of welfare. In the first instance, increased employment of technique means saving in the use of land; the scarcity of the land is reduced, and from this angle, rents decline, if rent is *regarded as a payment* for the scarcity of land. In respect of the transport improvements, the differences in situation are minimised with the result that rents also fall. Regarding the behaviour of population, there may be two opinions. There is the likelihood of population to rise (especially in the backward countries, which on the first impact of progress, raise their survival rates) with consequential congestion and greater demand for land; this would raise rents. But if the population declined, higher standard of living heightens demand for housing and recreational purposes; rents would be raised. And the welfare state may establish more and more industrial units with the consequence that the rents are on the incline. How far would these rent-raising factors nullify the rent-depressing ones, depends on their relative strength. Still, it could be said that the balance may be in the favour of the factors favouring the raising of the rents especially in the long secular period.

The Inference From the above, it may be inferred that the operation of the Ricardian and the Marshallian theories of rent is not without exceptions. It needs to be re-emphasized that the actions of men in renting land are very similar to those that underlie in evaluating other factors of production. And in the light of the above analysis it may be concluded that farmers are distributed on different farms in accordance with their efficiency and in keeping with the efficiency of the lands they cultivate. But due regard must be had to the operation of certain "invisible" institutional factors, like prevailing customs, sentiments, and ignorance, that hinder the full and free operation of economic forces. Variations in the efficiency of labour and other factors of production influence the determination of rent. Efficient farmers realise higher rent, being able to bid high, when competing with other farmers. It may be said without any exaggeration that the rent of land, perspective, is fixed according to the law of transfer earnings and not according to the other outmoded and out-of-date theories, now discarded.

Profits of Enterprise The next item is profits that accrue in the agricultural sphere. The payment of rent is the most important of the payments made by a farmer, but profits stand next in the order of significance to the farmer entrepreneur, who undertakes the enterprise with a view to making the highest profit. This is the order of priorities which the farmer himself sets for himself. Profits are to be viewed as the difference between income and expenditure (costs and receipts) of the farmer entrepreneur. More efficient farmers reap larger profits, than his relatively inefficient brethren. The most efficient farmer could secure high profits from land that is most useful for a particular line of production. But these preliminary concepts have to be understood clearly.

Difficulties of Definition While in the case of the other factors of production there is a definite demand, from some external source, in the case of the entrepreneur, the demand is self-created. The entrepreneur is purchased by the community, indirectly, this statement is just to complete the theoretical framework. The other difficulty that arises in the assessment of profits is that while the receipts of the other factors of production are more or less clearly defined, those of the entrepreneur contain an element of his wages which are indistinguishable from his profits. In the case of the farmer-entrepreneur this difficulty is of paramount importance as the farmer is himself the entrepreneur and also the participant in the act of production. Thus his wages are intermixed with his profits. And the,

difficulty persists because of small farming unit, the accountancy aspect is very very defective, so that no clear line could be drawn as between the different earnings of the farmer. Gross profits consist of several different elements : interest on entrepreneur's capital (machinery and equipment) that accrues to him, rent for land which the entrepreneur-farmer owns and cultivates, wages of the labour that the farmer and his family invest on a family farm, other payments that also accrue in the shape of the advantages gained in respect of free food and other such farm provisions for him and his family; and the unearned increments in respect of land, equipment and the produce whose price may rise due to certain social phenomena. To disentangle pure profits from these composite payments is difficult. Still, bearing this in mind that profits are also of the nature of the monopoly and conjunctural gains, the distinction as between the entrepreneurial earning and other rewards is clearer.

The Farmer Entrepreneur. The functions of the entrepreneur in farming business have to be understood clearly in order to assess his role and the nature of his profits. The entrepreneur in the farming business is not a little different from that in other businesses. Firstly, the farmer is exposed to the hazards of nature and the inclemencies of weather. Even if the farmer had all risks insured, the premiums would be higher than charged in the industrial sector. Secondly, uncertainties in agricultural enterprises are more pronounced than in other undertakings. Their seasonal character adds to the multiplicity of these uncertainties, which in industry prevail to a very much lesser extent. Thirdly, monopoly gains in the business of farming are not as in the field of industry, for the simple reason that the unit of operation in farming is the small-scale, and any isolated unit is unable to influence price. And fourthly, the accrual of conjunctural gains in these pursuits is more for agricultural demand and supply to change. Supply seldom assumes an elastic character as that of industrial products. The scope for the introduction of new and novel products is limited in the sphere of agriculture, while in the manufacturing sector, this is an important and significant reason for differential profits earned by different entrepreneurs. And lastly, we must also recognise the agricultural entrepreneur as much less enlightened than his industrial and commercial compatriots, who devote more time and money to improving their knowledge about men, methods, markets and many other things.

Rate of Profit. There may be a rate of wages, a rate of interest, and also some rate of rent, but it is impossible to speak about a rate of profits except in a very blurred sense.

Profits are distinctly individual payment varying from person to person, from farm to farm and from enterprise to enterprise. In fact, the profits are highly personal. There could not be any uniformity about a rate of profits, for their one characteristic is their variability. From this angle the rate of profits is a misnomer, though speaking vaguely, the "rate" of profits in the industrial sectors may be higher than it is in the farming sector, meaning thereby that the earning in the former are higher than they are in the latter. But the misconception needs to be cleared at this stage for profits vary from enterprise to enterprise, and from person to person and have no reference to investments made, the rates need not be high with the bigger investment, nor would it be lower with the lower investments. Hence to speak of a rate of profits is a misnomer and also not correct from the point of view of clear thinking.

Theoretical Explanations The main explanations centre around the concept and the definitions of profits. It was F B Hawley who announced that the profits were a reward for the *risk bearing* functions. This seemed to be partially true, for the amount of the risk in the economic activity is of great moment, and the entrepreneur has to cover it in order to be successful. But with the development of insurance, the element of risk no longer remains such a threatening factor, as it could be insured, in the west, in particular, the insurance against risks in the agricultural sphere is very prevalent. It could not be assumed that high profits are at all proportionate to the risk assumed, for in the sphere of agriculture as compared with the industrial sector, though the magnitude of risk is very high, yet profits are not at all high. And a successful and wise entrepreneur insures most of the risks rather than bear them himself. An improved theory was enunciated by J B Clark, who took a dynamic view profits are the difference between the *static price* and the *dynamic factors* this means the dynamic factors are responsible for the emergence of profits to enterprising entrepreneurs who have the capacity of forecasting the future with a greater amount of exactness. This view is criticised on the ground that *profits* are also negative, and the dynamic explanation could not account for the fact. True, in a stationary state, the profits may vanish under competition, but we are not living under static circumstances. If the law of change were known, profits would not arise. But the common experience is that profits still emerge and also continue to persist even in the face of better knowledge about the law of change. Professor Knight described profits as a reward for bearing uncertainties. Knight makes a distinction as between the *foreseeable* and *unforeseeable* risks, the foreseeable risks are

insurable ones, and the unforeseeable ones could not be insured against. These latter are termed *uncertainties*. The *foreseeable* risks are regarded as *physical risks* and are insurable, these could be covered beforehand by the payment of premia, but not *uncertainties*, or *economic risks*. *Uncertainty* is regarded as a separate factor of production and the profits as a payment for uncertainty-bearing. It is also pointed out that uncertainty-bearing is usually concerned with capital investment which in the farming business, is very low. Uncertainty-bearing does not limit the supply of the entrepreneurs, nor their functions. Uncertainty bearing could hardly be elevated to the status of a factor of production. In the light of this, it must be admitted that as far as the farmer is concerned, there is no satisfactory explanation of profits at least in agriculture.

Profits in Progress. Taking the dynamic view, in agriculture, there seems to be no cause for pessimism, though the anticipation is that the profits may decline with economic progress, which would leave fewer opportunities for better investments. But in agriculture, the effort to achieving parity with industry would ensure that progress heightens profits secured by an agriculturist. Transitional is the present phase in agriculture, even in those economies, where disintegration of holdings has considerably reduced their size. With growing consciousness and with the passage of time, the uneconomic character of agriculture may no longer remain. Another point is that the size of the holdings may also be enlarged with progress, for the consolidation movement ensures at least an optimum size; consequently agricultural profits are raised. And then, there is the impact of scientific progress and the march of technique, which is unabated in itself; ultimately agricultural costs are reduced and greater profits left for the cultivator. Finally, the recent movements for the stabilisation of agricultural prices, so as to eliminate fluctuations would be potent enough to increase the cultivator's income. This may be noticed in its economic bearing on agriculture. The farmer may grow more and more proficient in his business and accumulate and invest larger amounts in his farm with the result that profits may be considerable. On the whole, the impact of progress on profits is to increase them, in so far as the agricultural sector goes, and the farmer-peasant is concerned.

In Perspective. In conclusion, profits appear quite important as an incentive for the farming business. Economic performance may be creditable under high profits. Without profits the farmer could not build up reserves, which are the lowest as far as the farming business is concerned. And he would also

stay on in his business, with the lure of good profits. In this connection it may be pointed out that profits provide this spur to the farmer and prevent him from falling into the rut of tenancy which is avoided to let peasant proprietors flourish. This would have far reaching effects on the agricultural system. From the social point of view, good profits stabilise agriculture and strengthen the economic foundations of the national farm economy.

Wages and Labour The problems of wages and labour are important. From the national point of view, a good labourer is an asset to the economy in general for he works harder and the productivity of land and agriculture heightens. There are different types of farm workers. First is one who is lodging, boarding and sharing the life of the farm family, he expects to become an independent farmer in course of time. Next is the worker who lives in a separate boarding house where he dines to himself, and does not have any personal touch with the farm family. In his case, the wage motivates his action. The *third* type is the hired married worker, who lives in cottage to himself, in addition to the wage that he receives in cash. This worker has the lure of being able to get some place to live, and is, therefore, ready to accept even low wages, for there is the additional benefit of residential accommodation. *Fourth* type of worker finds his own place to live and lodge, but who works on the farm, he is not a part of the farm organization, for both the wife and the husband have to be kept contented if the worker is to remain on the farm. And *lastly*, there is the landless, unskilled labourer who lives in the village in some sort of a hovel and works off and on for the farms. The wages in all these cases are different. This point has to be remembered in all discussions about wages and earning. A wage may be defined as a payment for work done by labour, whether that work be mental or physical.

Methods of Wage Payments The fixation of wages differs with the different methods employed by an employer. In the first instance there is the method of *piece wages*, which are paid when the work could be easily standardised or measured, or when an employer wants a larger output. Total remuneration is determined by input on the farm, he may be paid by bushels that he binds or by furrows he ploughs. But no regard is paid to the quality of the work done. *Time wages* are preferred when quality is the main consideration, or work could not be standardised or reduced to piece work. For instance, the managerial and the administrative jobs are not possible to reduce to piece work with the result that this type of work is paid according

to the time spent, say by the week, month or year. *Third*, the *task wage*, is paid for a certain task, which the farmer assigns to the labourers; the wage is paid when the task is over as a whole. The task is definite and known both to the farmer and the labourers, and therefore, the wages are also definite and settled. *Fourth* type of wage is known as the *contract wage*, paid by *contract*; a certain job is to be completed within a certain time-span, and if it is not done, the contract is unfulfilled. And then ranks the *sliding scale* method by which wages are paid according to the variations in the prices and costs of living. Some employers enter into what is commonly known as *profit sharing*, while the others prefer the pure sliding scale system. Odd as it may look, the sliding scale system; though not practicable in the realm of industry is quite common in agriculture sector. For in agriculture, a part of the wages; (and even the whole of it in certain regions) is paid in terms of kind, and thus the adjustment to the cost of living and the prices is automatically made. Next is the *premium wage* (which may be attached to the *basic-time wage*) this is paid for extra work. This is an *incentive wage*, payable to labour, in order to impel them to work harder. Another type is the *group wage*, paid to a group, (in the case of agriculture, the family) for the work that they put in; this wage has the relative advantage of ensuring labour supply, for it is the group that is to bother for securing labour supply for specified jobs, and not the employer. *Customary wages* are especially important in the sphere of agriculture, for they are not determined by the interaction of the forces of demand and supply, but by the sanction of custom. And lastly, the *minimum wages* are fixed by some external authority, in the case of the very low-paid professions, and for agricultural workers, and low-paid, unskilled, landless-labour, who do not earn much, and whose work is also of a casual nature.

Fixation of Wages. In the various explanations of the wage theories, there is the Subsistence Theory of the Physiocrats, according to this theory, which is based on the Malthusian Law of Population, the level of wages would always remain on the *subsistence level*, for if the wages did rise, the multiplication of the numbers would nullify the same: greater competition among the wage-earners would again depress them to the former low level. This is also known as the "Brazen Law of Wages", or the "Iron Law of Wages". In fact, the theory crystallised itself, from the observations, which the French School made of the poverty-stricken conditions of the French peasantry. And it must be said to their credit that as the Malthusian trends of population are visible, this theory is applicable, especially in

the backward regions, where population expands at a rate which brings living to the subsistence level. In the advanced economies, however, the theory is inapplicable, simply because of the fact that the Law of Malthus does not apply, even in the agricultural sector. But the world being predominantly constituted of backward regions, the application of the theory seems to be quite wide. In agriculture, the application is unexceptional for the law of population does operate and with redoubled vigour especially in the backward regions. Without going into its intricacies it is pointed out that its application is limited by the limitations imposed upon it by the Law of Malthus. The next theoretical framework is that of the *Residual Claimant Theory* which was enunciated by the American economist, Walker, who thought that wages are a residue left over to the labourer, after all other factors of production are paid out. He did not think that any law operated for fixation of wage, wages were paid by the amount of this *residue*. In this connection it may be stated that the theory seems to apply to agriculture for the farmer does receive his 'wages', only after he has paid out the other agents of production. Thus wages could rise only by slicing the claims of other factors of production, or by increasing total production. The farmer would be well-advised to improve his productivity and reduce the recurring charges that he may have to pay, thus the residue could be increased and so also only could his wages. Objections against the law arise from the fact of wages being possibly raised by collectivisation or by state intervention without the residue having been raised in any way. It also ignores the influence of supply on the wages and the wage payments. It is also pointed out that the *residual claimant* is not the worker but the entrepreneur who undertakes production, in this sense it may be said that this theory does eminently suit the *farmer entrepreneur*, who is also the labourer and the entrepreneur. On the whole, the theory is not unreal, for it is based on a recognition of the fact, that in the farming sector, the theory does explain the remuneration that goes to the peasant proprietor, who is the recipient of the residue, after all other agents of production have been paid out by him. In the *Marginal Productivity Theory*, wages approximate to the marginal product of labour, while Taussig thought that it was the *Discounted Marginal Product* that accrued to labour, for in his view, there always elapsed some time, between the payment to labour (which was made in advance of the sale of the articles and the commodities), and mathematically speaking, the labour must get deducted the discount for the same period of waiting. The theory is a familiar explanation of wage determination in the industrial and the commercial sectors.

rather than in agricultural, for the simple reason, that the farmer seldom makes such detailed calculations as to decide first about the marginal product and then about the discount to be deducted from the same. The modern modification to the above theory is that the wages are fixed as between the two extremes, the one determined by the *discounted marginal product*, and the other determined by the subsistence of the labourer or by his *standard of living*; where exactly the wage would be determined is decided by the bargaining strength of the two parties, the employers and the employees, and that would be wage-level. The upper limit is the *economic wage* (that fixed upon by the marginal productivity in the discounted measure) and the lower limit (fixed by the living or the subsistence standard) is the *social wage* (that fixed upon by marginal productivity in the discounted measure) and the lower limit (fixed by the living or the subsistence standard) is the *social wage*. All wages must fluctuate between the *social* and the *economic* wage-levels. And this level, by itself, is also indeterminate, for the discounted marginal product of each worker is not calculable, either by the employer or by the labourer himself, though the lower limit, the *social wage*, is more determinate, for the subsistence level is more or less known for the labour force. Still, the modern modification of the wage theory of the Marginal Productivity (along with the addition made by Taussig) is only a theoretical framework, not useful in practice especially as it obtains in agriculture.

Wage on Farms. In the realm of agriculture, the application of the theoretical apparatus in respect of the wage-fixation is not a little different from that in the sphere of industry. The wage is the result of the bargain made between the employer and the employees; the amount that the wage-earner demands depends on desire for employment while the amount that the employer would offer, is based upon the anticipated usefulness of the labourer to his enterprise, and the state of actual competition as between employers and employees and its employer-employee aspect. This triangular competition determines the actual wage to be paid to labourer. The supply of farm labour force is not so mobile as that of the industrial one. Second, the workers who are accustomed to farm work very much hesitate to shift elsewhere as they would be totally unskilled for any other job. Thus there is rigid and inflexible supply of labour to the farm labour market. It may also be pointed out that the demand for agricultural labour is more or less of a seasonal character with the result that wage variations are more pronounced here than in any other industry. Agricultural wages are of *residual* character, and not determin-

ed by *scarcity*. To the urban industries apply the theories of the marginal productivity, while in agriculture, residual claimant theory stays. There has been a comparative over-supply of labour in the sphere of agriculture, particularly now, because of the mechanisation craze. Farming, therefore, has mainly remained a *labour-intensive* industry, except in recent times, when it assumed the *capital-intensive* character. And in agriculture has persisted the *endemic surplus of workers for whom no better employment is to be found*. Thus agricultural wages stay at a low level, nearly at the subsistence level. And then migration, its nature and character, has also to be noticed, migration urban wards leaving a residuum of people for whom there is not a chance of improving their prospects by moving to the towns, this residuum of unenterprising, slack and unadventurous people in the villages, could not command high wages, they got paid low wage rates. Another cause accounting for the low level of rural wages is the fact that agricultural pursuits were always ready to receive back the surplus which urban areas did not and could not absorb in their industries. It may be pointed out that this sort of *backward movement* of the surplus population is still persistent in backward areas. And then the custom of making payments-in-kind treating the worker as a semi domestic and giving him a semi-subsistence status have also survived and accounted for the low wages in agriculture. Next, even if the workers be employed more or less on a permanent basis, the agricultural operations remain only seasonal, with resultant low wage levels. And lastly, agricultural workers have, so far been unable to organise themselves as workers in the urban areas do, consequently trade union action has been absent.

Custom and Competition The role of custom and competition in the determination of the wages, in agriculture, is an important point to be reckoned with. In the first instance, it is custom that is the major determinant of wage levels in the sphere of agriculture rather than competition. In the backward countries, especially, the force of custom is quite important and wage determined with reference to its operation for rarely has the ignorance of the farmers let them make them requisite calculations of their critical appraisals about customs which is accepted as such. But with the passage of time, the force of custom considerably weakens. Meanwhile, with the introduction of the money economy in the backward economies, the *customary* wages which were being paid in kind, (and thus automatically adjusted to the cost of living) were converted into cash, and made rigid. Thus the low level of the agricultural wages was established by their conversion of customary

wages (paid in kind) into cash terms. With the emergence of competition in rural areas, and in the light of factors, enumerated in the last paragraph, a low level of wages persisted in the agricultural sector. And when competition replaced custom, its severity was pronounced; the result was that the wage levels sank to very abysmal depths. Custom worked havoc, when it was converted to cash, and competition made things worse.

Wage Incentive. Wage methods in agriculture are more or less of the routine type and not of divers types; therefore incentive methods have not yet found their place in rural life and work. Wage incentives are being utilised in the industrial sector for an increase in productivity but they are conspicuous by their relative absence in the agrarian sector. The problem is not so easy as one may imagine, for some "un-scientific" incentives could be said to have been in existence in agriculture. For instance, in farm life, free meals and lodging may be offered discriminately to better types of workers only, and not to the less efficient and productive labourers. This may be taken as an incentive for more efficient, productive, and permanent work on the farm. Another incentive is the offer of the *premium-wage*, which may be supplemented to the *basic-time wage*. This wage may be paid for greater productivity due to efforts of the labourer, and shared between the farmers and the labourers, with a benefit to the latter. This may also induce the worker to put in more efforts to get a larger share out of the increased farm productivity. Still another incentive is produce-sharing talked of in chapter '*Ownership and Tenancy*', where pointed attention to the system of profit-sharing as applied to the farming systems was drawn. In this the effort of the "tenant-labourer" would be directed to raising mere produce in order to get a larger share out of it.

Regulation and Wages. The objective of wage regulation is to improve wage levels as also the conditions of work. Certain countries have set up wage conciliation boards, to adjudge matters in the event of disputes. In England, County Committees were set up with a view to fixing the minimum rates of wages for all agricultural workers, to regulate the overtime rates for them and to standardise the payment of kind wages in lieu of cash wages. Such wages were fixed as would be conducive to the promotion of efficiency and ensure good standard of living. Later on, these powers were transferred from the local committees to the Central Wage Board, to enable larger number of workers to benefit. These efforts have been laudable, though; but it is implementation that matters. Efforts have also been made for the regulation of wages and conditions of

employment for the young and the female workers, in regard to their emoluments. Workmen's compensation benefits could have been extended to agricultural workers along with other benefits, commonly extended to other workers, elsewhere. True, there are difficulties of wage and work regulation in the sphere of agriculture, these difficulties are inherent in the very nature of agriculture itself. Firstly, so widespread are agricultural operations in point of location and so diverse in character that it is rather hazardous to implement the most well-meaning legislation. In the second place, ignorance and illiteracy of the labour force accounts for their helplessness, in case regulations are infringed. They do not understand the implications of Law nor do they have the means of suing the defaulter in a court of law. Litigation is costly, its results are uncertain. The lack of trade unionism among agricultural workers deprives them of the strength of stable trade unionism. And lastly, the lack of publicity of wage regulations in rural areas, spells their doom. wage regulations as may be framed, may be rather difficult to enforce and implement. Regarding minimum wages, it may be pointed out that unless fixed in grades and classes, so as to cover all types of labourers, those would tend to discourage the more efficient wage earner, who is, thus, brought at par with the inefficient one. Hence, in the rural sphere, the fixation of the minimum wages, on a general scale may be not only difficult but also fraught with danger.

Agriculture and Industry Reference may be made, in this connection to the divergence between the wage levels in agriculture and industry. In the first instance, disparity persists because of the lack of standardisation of agricultural wages while in the industrial jobs, there can be complete standardisation of different jobs and an assessment possible about their remunerative aspects. Secondly, the conditions of work in industry could be brought under the effective control and close supervision, but not in agriculture where outdoor pursuits call for work at odd hours. The lack of trade unionism in the agricultural sector has been responsible for bad conditions of work. Fourthly, the persistence of the 'converted' customary wages is responsible for this disparity. And lastly, the agricultural worker is not so conscious of his rights as his industrial brother with very obvious results. Agricultural and industrial wages might still continue to be disparate, for the reasons which also persist.

Progress and Problems What are the problems that emerge in the impact of progress? These questions are at once complicated and involved. What is going to be the trend of wages in

the dynamic sense? Dynamism may be evident in the increase of inventions and innovations, the behaviour of the farm population, and the state attitude to the same. In regard to the first point the fact is that the nature of this trend is governed by the character of innovations. Are these labour-saving or capital-saving? Mostly inventions and newer technique, employed on farms, are labour-saving. Another fact is that inventions require specialised and skilled labour which must be paid higher now. Farm wages tend to rise prospectively holding out the promise of better status to farm labourers. Hence, the problem boils down to raising wage levels via efficiency and skill. Also, it may be pointed out that by the initiation of national schemes in rural areas, as Extension Services and the Educational and Training Programmes, the marginal productivity of farm labour would heighten. The proficiency of the marketing system would also reduce the *discount* that may be (even theoretically) deducted from the marginal product. Hence in this sense, too, the wages of labour would tend to rise. And judged from another point of view, the behaviour of the farm population, even in the backward economies, is towards the restriction of numbers. Also are steps being taken to widen the horizon of economic activity in the rural sector, and diversify the employment range in the agricultural sector. That would raise the demand for labour, with the result that wages, necessary to employment of labour, would have to be raised. The pressure of population on lands is also being lightened with the result that wages may be levered up as a consequence. And then the attitude of the labourers also counts for much: they are now getting more conscious of their rights and privileges and may refuse to accept low wages for their work. and thus themselves try to raise and make better their living and working conditions. With greater enlightenment, and diversified employment opportunities before them, labourers need not suffer the evasion of beneficial legislation. And the State's attitude to agricultural labour is also becoming more definitely helpful and all sorts of legislation are being put on the anvil in order to help raise their standard of living and secure them a living wage.

Critical Assessment. This concluding paragraph gives a critical review of the wage problems in the agricultural sector. In the first place is assessed the influence of state legislation in raising the wage levels. The results of statutory control have not been wholly beneficial; though instrumental in raising general wage levels, they have still not raised these appreciably, for the employers have mostly sliced away other benefits previously accruing to labourers (in the form of a share out of the produce at the harvesting time, or lodging and boarding with the master) with result that the advantage in respect of

real wages has been not maintained. Probably real wages may remain at the same level. Payments in kind have been adversely affected by regulated wages, and statutory controls. Incidentally, the personal relationship that tied the labourer to his employer gets weakened by the introduction of this cash system, and by the enforcement of minimum wages. Also the elasticity of the agricultural wage system is strained, with the result that the profit-sharing and the other similar schemes stand shelved. Special bonuses, and *Inams* have disappeared. Increase in labour costs intensifies the drive for the adoption of the labour saving devices. The casualisation of the labour force is also another possible result of the enforcement of wage regulations, this is the experience in Britain. This tendency is on the increase, to evade the wage regulations, which may not apply to casual labour. But as against this may also be noticed the healthy trend to the growth of trade unionism in agriculture.

The Rate of Interest Interest is the price paid for the use of loans, and credit advanced to peasants. The capital investments in an industry depend on its earnings, in agriculture, the rate of interest would determine the range of the capital investments made. In other words, the rate of interest that farmers can afford, influences the supply of capital to agriculture. Credit is very essential to agriculture, more than to other undertakings, the credit needs of the farmer are very inelastic indeed. A good credit system facilitates adjustments between those who have surplus money and capital and those who are in want. This adjustment is brought about by the rate of interest. Thus the role of the interest rates is quite a significant one. Interest is paid for the use of borrowed money without it a loan would not be forthcoming. Money borrowed may come from capitalists or co-operative societies or banks, and this money is borrowed for the purpose of investing it in land, or equipment and to pay labour, or buy certain necessities of life. Thus credit may be obtained for productive or non-productive or unproductive purposes. But it has to be understood that the rate of interest as commonly understood, is *gross* as not *pure* interest.

General Considerations It may be correct to distinguish as between the *gross* and the *net* rates of interest. The gross interest includes payments for the insurance against risk, (the risk may pertain to person or trade), wages of management (payment for administrations, accountancy, etc.) the return for inconvenience (inability to make the full use of the money that he would have had in his possession, had he not lent it) and the difficulty of recovery, the amount lent may not be recovered.

except in instalments. The money-lender's rate of interest is high because of all these various factors but there are also differences, in interest rates as between places and places, trades and trades and also persons and persons. These differences may arise due to differences in distance (people are always willing to invest nearer home) and differences in social esteem (a person with greater integrity and better reputation would pay low interest) differences in the amount of the loans (generally a big amount means high rate of interest) and lastly, the differences in productivity of the enterprise for which the loan is extended, for the rate of interest is higher for the unproductive loans. Productivity of capital, and that of enterprise are two different things but it may be pointed out that the latter is responsible for rate of interest.

The Classical Explanation. The determination of the rate of interest is explained by the classical writers. By the Abstinence Theory, the payment of interest arises out of abstinence or sacrifice made by the lender who is deprived of the use of his funds. Saving could be interpreted as sacrifice on the part of the savers. This reward is in the form of interest payment made to the lender by the borrower. Marshall, who modified this theory, substituted the term "waiting" for "abstinence". He opined that waiting involved the payment of interest, for if and when the lender has to wait to use money, which he had accumulated, he must be compensated for that. Interest compensates him for his act of waiting. Though true a great extent, the theory does not afford an analytical explanation. The Agio theory is attributed to the Austrians, who gave it a final shape and attributed the payment of interest to the psychological factors. In essence, the theory states that interest is paid because the human tendency is to prefer ready goods and present consumption to the future; therefore, there is a premium on the present goods. Greater gratification is derived in the present, hence the person who foregoes present consumption because he lends to somebody, must be compensated for the same. Interest must be paid in order to induce people to lend money and forego their present satisfactions for a future date. Interest equates future satisfactions to the present ones. Bahm Bawerk, who enunciated this theory, gave the reason for this state of affairs; there is the prospective underestimate of the future, present wants are more keenly felt than the future ones. Fisher criticised this theory and instead put forward his own theory, the Time Preference Theory; interest was paid due to the 'time factor', this meant that the longer the period of time that elapsed between lending and repaying, the higher the rate

of interest From the viewpoint of the lender, the fact is that his income resources may not remain uniform throughout life-span, or it may also increase with the passage of time The greater the degree of certainty as regards the future enjoyment of income, the smaller the degree of the *time preference* of the rate of *discounting the future* But the character of the individual also influences his time preference, for a man of forethought would discount the future at a lower rate than a spend-thrift This is also influenced by the expectation of life which being low in backward countries as India, raises the rate of interest The proportion of the income that a person is prepared to lend influences the time preference In short in the context of this theory, the rate of interest is the resultant of the time preference of lenders Then the explanation of the rate of interest is also couched in terms of the marginal productivity of capital, the rate of interest is the marginal productivity of the capital translated in the terms of money Interest rates correspond to the marginal productivity of capital Another explanation is in terms of the demand for and supply of capital, it is supplied at a certain rate of interest by the intersection of the demand and supply schedules when graphically represented All these theories are theoretical, and do not have much relevance to actual conditions in the rural areas

The Modern Theory It is difficult to point to the modern explanation, for there is much bitter abuse about the rate of interest The most prominent modern explanation is given by Lord Keynes Criticising the other theories of interest, he pointed out that marginal product has nothing to do with the determination of interest which could not be explained in terms of psychological forces, nor was that desirable To the contention, that interest is a payment for savings, Keynes pointed out that while some people saved, they do not receive any interest Nor did interest equalise the demand and the supply of the capital, as imagined by the classical writers Keynes suggested that interest phenomenon should be explained in monetary terms alone The rate of interest varies inversely with *liquidity preference*, the higher the liquidity preference or preference to hold liquid cash, the lower the rate of interest, and *vice versa* Motives for holding liquid cash arise either out of transactions or precaution or speculation or investment Be that as it may, the fact remains that the rate of interest varies inversely with liquidity preference If the rate of interest is low, it will cost less to hold money, and more money would be held, while if the rate of interest is

high, it costs to hold money, consequently less money would be held. From another point of view, if liquidity preference is high, the desire to have more loans, in the market as a whole, would be less intense with the result that the rate of interest is low, and *vice-versa*. But this theory is criticised by modern economists who stress the demand for investible funds, which really determine the rate of interest. It is contended that what Keynes termed 'propensity to consume' Bahm Bawerk styled 'underestimation of the future'. And Keynes' theory applies to countries, which have a highly developed banking system; this means that the theory has limited application, in the old agrarian economies. An improvement on this explanation is the theory put forward by Professor J. S. Bain; the rate of interest is determined by the equilibrium between demand and supply of loanable and investible funds. Supply comes from liquid funds available at a certain period of time and the demand from investments and liquid balances.

The Agricultural Setting. In agriculture, the above theoretical framework does not apply in the form, enunciated by the masters. It may be said at the outset that the rate of interest in the agricultural sector is the *gross rate* and not the *net rate*. True, that the time preference does account for enhancement of interest in rural areas, and that the personal factors also count for much, but it may be pointed out that, the rural rates of interest could not be explained in terms of these factors alone. The *demand and supply* explanation could, to some extent, account for the high rates of interest usually prevailing in the rural area but not the Keynesian explanation. In regard to the theory put forward by Prof. Bain, it need only be observed that this explanation is only a modification of the *demand and supply* theory and to that extent does hold good in the rural sector where the supply of capital may be perennial but its demand is only seasonal. Capital is in demand only in the rush season. If investment was stable, the rate of interest may be low, but when demand is fitful and only seasonal, the rate of interest is high (as in the agricultural sector) for only a high rate of interest could compensate the investor or the lender and enable him to get an adequate rate of interest on an average. Then there is the element of risk, the greater the amount of risk, the higher the rate of interest. Risks in agriculture are both economic and personal; agriculture is a hazardous venture, and the chances of recovery from a poor farmer with a low stayings are also remote. Then the lack of knowledge on the part of the borrower also make for the high rate of interest, which he is willing to pay to the lender, who in the village arena holds the position of a monopolist. as being

the only lender. Theoretically this is the reason for the prevalence of high interest rates in Rural India. Another factor of some importance is the plan of partial and instalment payments. The farmer may pay only in very small instalments due to his indigence. Another cause may be the legislative impact on interest rate, the restriction of credit that is brought about by legislation goes to raise the *effective* interest rates. This is the experience gained by a study of the after effects of debt legislation in the Punjab. Mr Darling maintained that the rates of interest rise with a fall in farm income for the credit-worthiness of the farmer falls, and the charge for loans are higher. With the break up of the customary set up in the village, and with the introduction of the money economy, the rates of interest have tended to rise, for the forces of competition have been let loose with adverse results. And consequently, the old bonds that were holding down the interest rates also broke down, with the result that they rose with a spurt.

Demand and Supply The forces of demand are both seasonal and inelastic, as far as the farming sector is concerned. Farmers could get credit either by inheritance, or saving or borrowing. The first source is very limited, for family farmers could not hope to leave large fortunes to their survivors. In regard to the second, savings could not be expected to satisfy the needs for funds on the part of the farmer. The major source of all the funds is from the borrowings, as far as the farmer is concerned. In fact, farming industry is run with limited means and little capital. This means that it is dependent for capital on outside sources. Its financial structure is that of family, hence, interest rates are determined with reference to social status, too. Demand from the farmer is of an inelastic nature, for he *must* have money for harvesting and marketing, and in the backward economies, even for the purposes of satisfying the social demands of the society in which he lives, and to whose standards he must conform. Illiterate as he is, he does not mind paying high rate of interest. Thus, as far as theory is concerned, the farmer should not pay a rate of interest higher than the marginal productivity of the money that he wants to borrow. But the practical consideration is that his demand for money is *unproductive*, hence the rate of interest is high. From the supply side, the rate of interest is determined by the competitive ness of the enterprise and the position that the lender holds, in regard to the supply of capital, if it is more or less of a monopolistic character, the rates of interest that he does charge, would certainly contain an element of monopoly charges.

Interest and Investment Attention needs to be drawn to the

role of interest in agricultural investments. It may be pointed out that the flow of capital to these enterprises is insufficient for needs. The reason for this state of affairs is obvious enough; family finance cannot adequately finance farming enterprises; and secondly, the opportunities for investment and its return in the industrial sector are higher than they are in the agricultural sector. The confusion of legislative regulation of agricultural interest rates is also responsible for starving agricultural enterprises relating to urban and industrial enterprises which yield higher returns to the investor. And then another factor must be reckoned with, and that is with respect to equipment in the agricultural sphere; a large number of farms stand in need of modern equipment, but their incapacity for borrowings is their handicap. This is a strange and a contradictory state of affairs, the needs of the farmer are quite high, but the rate of investment in his enterprises is considerably low, with the result that the rates of interest go on rising in the rural sector. Another consideration is the non-capitalist structure of the farming business, which is more or less not run on the basis of large capitalist lines, nor on the basis of large capital investments. But while farming enterprises have remained non-capitalist (an industry not run with an eye to the maximisation of profits), the needs of the agricultural enterprises have been on the incline, with the result that the farmer, if he were to improve his *business*, bring it in line with the modern requirements and stand the competitiveness of the market, experiences expanding credit needs. The rate of interest, in the circumstances, registers a rise in the agricultural sector. Another feature of agricultural investments is the predominance of long-term finance; most investors feel hesitant about sinking money in long-range investments, of a hazardous nature. While the nature of the farming business had ceased to be of the subsistence type, its finance for the enterprise is still meagre, as subsistence practices (and inefficient farmers) continue to thrive; interest rates rise and the sources of investment dry up. Also the family type of farming enterprise is more static (but family multiplies) thus financial needs expand, while financial resources do not. And the small-scale of the business also contributes to its over-capitalisation with the result that the cost of the loans must rise.

Prospective Angles. With the modernisation of farming enterprises, requirements in respect of finance mount up. Hence, the enhancements of interest rates. With increasing mechanisation of the farm enterprises, the trend is to rising investments in the agrarian sector; interest rates may rise up. The institutional sources of credit are drying up with the result that the

cost of the borrowing could not remain low. But with the perfection of the state agencies for financing the agricultural enterprises, and enforcement of the debt legislation, the rates of interest may be pegged low. With the development of co-operative credit, these rates are depressed, as also the cost of the credit. And with the extension of literacy and enlightenment in the farmers, their unproductive demand for the loans may shrink. This also points to the lowering of interest rates. One more factor is the emergence of *agricultural paper*, which has also brought down interest rates. With rising farm and land prices, there is increased security for loans, the consequences would be lower interest rates. With wider agricultural reconstruction and planning on the part of the State the greater part of the farm financing is nearly "free."

Aspects of Distribution The problem is to be adjudged from the agricultural angle. The work goes on, even if the remunerative aspect gets weak. Even if the farmer is not remunerated properly, he still goes on farming, though without the same zest, as when his remuneration was of sizeable character. Agriculture is a mode of living and not quite run as a profit-making enterprise. In this respect, there is a difference as between agriculture and industry and this difference does influence to a considerable extent, the nature of distribution in the agricultural work. This is very distinctly clear in this study. The impact of rent and profits is studied by the farmer who wants to maximise the profits out of his enterprise. The question of wages and earnings would next attract attention. And finally, the implication of interest charges, in their bearing on the agricultural enterprises, are also under discussion. And lastly this section analyses miscellaneous incomes, and the limitation and the bearing of all this analysis on the theoretical aspects.

Rents and Profits Rents and profits have been distinguished in the foregoing analysis. It only needs to be emphasised, that as far as the common farmer is concerned, this distinction is hardly practicable, for rent also accrues to him and gets mixed up with his profits. Another point to be noted is that the variations in efficiency also affect rents and profits. The influence of variations in the efficiencies of farmers is to be appreciated as in the competitive rent, for though imperceptible it is yet not inconsiderable. Again there is the effect of variations in the usefulness of land on the emergence and dimensions of profits. And then may be noticed the relative usefulness of equipment and labour on rents and profits. These points need not be laboured, but still it may be said, even if in parenthesis, that the link is there, for profits would obviously respond to the

variations enumerated above. Also the *differential advantage* in respect of a plot of land, as the factors of production work upon it, modifies with the result that rent also does. And under progress, the principle appears to be that the factor which is scarcer (under conditions of free competition and with increasing proportions of the other factors) earns a larger part of the product. The principle holds true in the case of land, which, of course, is the scarcest factor of production. Another point is that an improvement in farming in the locality may not only raise profits there but also the rent of the land.

Wages and Earnings. The various earnings in the agricultural sector are of the nature of wages of labour. Cash is only one of the earnings that the farmer gets. The earnings of the family farmers are in the form of wages, though these wages may be "invisible" in that the farmer gets a certain remuneration, which is mainly composed of the wages of the members of his family. What the farmer regards as a wage may be in the form of his total composite earnings. Wages may be the result of a contract between the employer and the employee. Strictly viewed, wages must have a range of variation, which is much less than the range in usefulness; the range in usefulness is not reflected in wage differentials. This point is quite significant for wages in the sphere of agriculture are arbitrarily determined by the terms of the contract as between the farmers and the labourers and these earnings are not calculated on a strictly economic basis, for they have a part of them due to the prevalence of custom, and another part due to personal factors, too. Thus the wages payment is a *diffused* payment and one that is also *composite*, with the result that it is earnings which the agriculturist gets, and not wages, *per se*.

Implications of Interest Charges. Interest is an imposition on the farmer and it often happens that the incidence of this payment is heavy indeed, and it forms a part of the costs of farming, too. Another point to be clearly understood is that interest also enters in the sale price of land, for the purchaser keeps both the sale price and the interest rate in mind when making the bargain. The credit needs of a farmer being inelastic, he has to pay a high rate of interest, with the result that the incidence of the same falls on the farmer himself, for he could not pay it out of the prices he gets for the commodities that he produces and markets; incidence falls on his own pocket which is already much exhausted. It is because of this reason, that interest rates have been regulated so that the remuneration for the farmer is at a high level. With rising interest charges, agriculture tends to be starved of credit, with

the result that there is under investment in the sphere of agriculture. But if, on the other hand, there is liberalisation of credit, the result may be an overinvestment in agriculture, with the eventual raising of farming costs. Hence, in following a policy of the regulation of the rates of interest, very great caution is needed, in order to keep farm costs stable.

Miscellaneous Incomes Difficult is the subject of the earnings in agriculture, for these are of varied character and diversity. These incomes are derived from the sphere of agriculture, no doubt, but the fact that they remain unclassified, is to be noticed. There may be extra incomes, which arise from conjunctural gains, or are in the form of unearned increments, which could not be included in profits, nor wages. The various subsidies which the farmers receive from the State are also to be classed as "miscellaneous" for they do have a strong influence on the structural basis of agriculture. It may also be stated here, that agricultural income more than any other types of income, experience greater and wider fluctuations because agriculture, by itself, undergoes regular seasonal variations and abnormal fluctuations. And then all agricultural incomes have a relation to the price cost structure. Unfortunately, the operation of the law of diminishing returns in the rural sphere and especially in cultivation has the same effect, that of increasing the cost of agriculture, and reducing incomes and therefore, profits.

Limits and Exceptions Production is the result of the co-operative effort of productive factors, and it is rather difficult to assign to any one factor, a defined role in this matter. This is especially true of agriculture, where the action and the reaction of the different factors of production is very much intertwined. If a particular unit of a certain factor of production were withdrawn from the productive process the whole process of production would seriously suffer. This is obvious. It may, however, be maintained that the whole thing needs careful reconsideration. And then the assignment of different roles to different productive factors is not very useful from the productive point of view, although it may satisfy the academic theoretician. Other exceptions to the analytical framework have been noticed in the foregoing paragraphs.

Summary The scope of the chapter has been rather wide and varied. An assessment of various problems of distribution, as applied to the agricultural sector was made, though the application to the agricultural sector has to be modified for the principles of general economic analysis could not be applied here. After a description of the production distribution

relationship, was enunciated the general theory of distribution in its application to the agricultural sphere. It was pointed out that the distribution as understood in this sense is *functional*. although the peasant is more concerned with its *personal* aspects. This is an anomaly, which may not be easily resolved by the Agricultural Economist. In the next section, the discussion centred round the exposition of *rent* in agriculture. Rent is an important payment made by the farmer. The Ricardian and the Marshallian theories of rent were also detailed: with the modern explanation in the terms of *Transfer Earnings*. The question of profits was the next to be dealt with, as also the role of the farmer entrepreneur *vis-à-vis* profits. The theoretical explanation was supplemented with an account of the sector of farming. The next section, which was devoted to wages, was initiated with an account of the methods of wages payments and followed by an explanation of select theories of wages. How the wages are determined on the farm is another vexatious question. Wage regulations and wage incentives were also explained with special reference to agriculture. The section was rounded off with an explanation of the problems of wages under progress, and a critical appraisal of the same. Rate of interest, which was the topic, discussed in the next section, was found to be of immense importance to the agriculturist. Classical and the modern explanations were advanced on the agricultural background. Demand and Supply aspects were also given an exceptional treatment in the Section which discovered that the conditions of demand and supply were rather rigid in this sphere. In the last section, were discussed various aspects of the distribution problem. In this context, the problem was attacked from the angles of interest charges (and their implication), rents and profits (accruing indistinguishably to the peasant) and wages and earnings of the farmer and his family.

Conclusions. Several important and significant conclusions emerge from this brief and short study. And these conclusions have a bearing on the economic analysis in the next chapters. In the *first* place, the subject is to be approached afresh and not from the accepted angles in economic theory. The general theory of distribution is not of much use in this exposition. In fact, the theory, if applied, must be modified out of recognition. *Thirdly*, the payment of rent is an important charge on the agriculturist and rent mostly accrued to the farmer himself, who has his own land to cultivate. More appropriate as an explanation of rent in agriculture, is the Marshallian explanation, and not the modern explanation couched in the terms of "Transfer Earnings." *Fourthly*, the discussion pointed to the

fact that the profits, as they are understood in the agricultural context, are not indistinguishable from the other earnings. This means that the role of profits is of importance, though but not so important as in the realm of industry, for the simple and obvious reason, that most of the farming is subsistence and family farming. In regard to wages, the explanation seemed to point to the diversity of the wage payments in agriculture, with the result that in the light of this it was rather difficult to cling to any particular theory. Still, the Residual Claimant Theory appeared to be most applicable to agricultural undertakings and determined the share of farmer out of the National Dividend. *Seventhly*, the regulation of wages in the tilling and farming operations was rather difficult of perfection, with the result that a regulation (unless the system of agriculture was nationalised) was bound to be leaky. And the modern theory of Lord Keynes could not be applicable to farm credit, though the explanation offered by Professor Bain could explain the rate of interest in the rural sector, where interest rates are either the result of monopolistic conditions, or the consequence of the operation of the forces of custom. *Ninthly*, the subject, as unravelled here, did not exhaust the whole sphere of agricultural earnings, which are of a diverse nature and also very much indistinguishably intermixed. And *lastly*, the conclusion appeared to be that the theories, enunciated above, could be only applied to the agricultural setting with very serious limitations, and they were also hedged in by very many exceptions. In brief, the subject of Distribution as far as applicable to the Agriculture, is quite confused and complex.

CHAPTER XXIV

AGRICULTURAL MARKETS

Explanations—Direct Sales and Marketing. The Middlemen's Functions. Marketing in Agriculture. Marketing Services—Assembling, Grading, Standardisation. Standardisation Problems. Packing and Processing. Storing and Warehousing. The Transporting Function. Financing and Risk Bearing. Dispersing and Marketing. Marketing Institutions—Fairs and Markets. Auctions and Exchanges. Local and Trade Boards. Futures and Hedging. Marketing Costs—The Distributive Margin. High Selling Costs. Middleman's Profits. Rigid Marketing. The Cost Analysis. Trends in Costs. Co-operative Marketing—Fundamental Principles. Forms of Co-operative Marketing. Advantages and Merits. Dangers and Disadvantages. Market Intelligence—Farmers and Facts. News and Inspection Services. Estimating and Forecasting—objectives and advantages. Agricultural Forecasting. Basis, System and Methods. Crop Estimates Livestock. Estimates. Reorganisation Objectives. Adjustment and Adaptation. Summary and Conclusions.

A grasp of the principles, according to which farm produce and income is distributed, is followed by a look into the problems of agriculture marketing. This descriptive analysis starts with certain explanations, about marketing and the middleman, who is the most important cog in the marketing organisation. The next section is to deal with the services of the marketing with reference to grading, standardsing, packing, processing, warehousing, transporting, financing and final marketing functions. This is important for any understanding of the system of marketing in the modern economy. Marketing institutions would be dealt with next and the full implications of the fairs, the auctions, the trade boards, and the like, studied. Another section analyses, the costs of marketing which have an important bearing on the pricing system in agriculture. In this section, the analysis would extend to the distributive margin, the selling costs, middleman's profits and the cost analysis, among other equally important questions. Co-operative marketing is significant development in the sphere of marketing; its fundamental principles and merits and demerits of its various forms are also described in this chapter. Market intelligence, too, has a full section, which outlines the working of the information services and examines estimating and forecasting in agriculture. In the next section, "agriculture forecasting," is explored the mystery of crop and livestock forecasting in particular. In this regard, a word would also be said about the utility of the same, in the matter of adjustments and adaptability, to be effected in agriculture.

Explanations In this section are explained some of the more elementary concepts in the marketing terminology. Certain terms require some clarification, because they may convey some different meaning from the common accepted one. On a self-sufficient farm one does not have to deal with any marketing problem, for what is produced on this farm is consumed away by the farm family. (And this is not a hypothetical case, in the backward countries, the farming system is not on an extended scale, as it is in the West.) This type is fast disappearing now with the result that the modern system is that of surplus farming, with its noticeable commercial aspects. Not only is the produce raised with a view to selling in the market, but also that market forecasts and estimates play an important role in the decisions which the farmer may make in regard to the cultivation of marketable crops. Surplus cropping operations necessitate the emergence of marketing problems in the agricultural sphere. In this section, a distinction is made between direct sales and marketing operations, (a distinction that is often lost sight of by the student of agricultural marketing), next are analysed the functions of the middleman, who is the pivot around whom the marketing system gravitates and whose functions are sought to be regulated by the proper authorities. The importance of the marketing structure is assessed in the next paragraph for without this understanding, this study will have been in vain. In this connection, it may be pointed out that one thing which is postponed to the next chapter is the market mechanism, which is a subject, related to the pricing processes. It was pertinent to have to point to this fact that with the increasingly growing commercialisation of the agricultural system, the marketing problems are also increasingly becoming important, and direct sales diminishing—rather they are now almost rarely met with.

Direct Sales and Marketing In the simplest system, the produce is sold away direct to the consumer, but this is restricted to those products which could be sold without any processing, though by direct contact, and for whom the chance of perishability is high. In the case of those products, which are raised just at the door of the consumer (that is, in that vicinity) the method of direct sale still persists. This method consists in the producer taking a retail round the houses and the consumers or selling by direct contact. The producer-retailer may also take up a stall in a place where demand is maximum, and start retailing the produce. The advantage is obvious the consumers obtain the commodity fresh and at fair prices, while the producer is able to pocket all the profits thus eliminating the middleman altogether. But the system also becomes

prevalent when the producer's attention is diverted from the business of producing but devoted to that of retailing, with the consequence that the producing process may suffer. From the consumer's side, the disadvantage is that the quantity and quality of supply is dependent upon the whims and the capacity of a single source of supply. In this system, the farmer is his own salesman. But now and then a distributive agency may intervene between the producer and the consumer ; all such middlemen are often non-agricultural specialists. This marketing system is characterised by the presence of several distributors, before the produce reaches the final consumer ; the distributive agents further sub-divide the functions which may be of a specialised nature. They perform the essential services, bridge the distance and the time which might separate the consumers and the producers, and also adjust the process of marketing. Without anticipating the argument below, it may suffice to say here that the marketing system is characterised by the presence of middlemen who intervene between the producers and the consumer, before the final sale.

The Middlemen's Functions. Proper functioning of the marketing system depends on the efficiency of the middle man, who is not always one single individual, but is one of a certain group of a chain of such persons, who take charge of the various stages of the marketing organisation. These distributors, in turn, find it necessary to divide and subdivide as between themselves the various functions with a view to getting the same to work in an expert fashion, and to ensure smooth running of the same. Specialisation may come about in the selection of the commodities, for instance. The fact remains, that there are too many middlemen, and some of them may be in charge of such jobs as could be dispensed with. Indian experience bears this amply. Sometimes, the middleman may also be the manufacturers, and the processor, although he may appear to be final in the chain. Does the middleman perform productive functions ? This question could be answered by pointing to the middleman's appreciable services : buying, classifying, sorting and labelling the produce. His functions, therefore, are productive and of real import, for it is he who brings the buyers and the sellers together. His most important service is the speedy disposal of the perishable stuff, which if it remained unsold, would be dead loss to the peasant. Being a specialist, he is able to perform his duties, more efficiently, than if the same were taken by the peasant himself. But his charges may prove to be exorbitant, and may have to be scaled down, in order that the agricultural enterprises may be more remunerative than they are at present. But more of this below.

Marketing in Agriculture Crudely speaking, a market may be a place where transactions are done, while in the strict economic sense, it connotes the fact of buying and selling. The simplest types of marketing consists in exchanging goods and for money. In the antiquated structures, money calculations not be few. While effect barter deals numerous thesedo persist in the backward economies. A market may be redefined as a sphere in which the price making forces act and react. Indirectly, this means that the market characterises a mechanism of a specialised type in a certain sector. Marketing is a productive process, indispensable to the completion of the physical process, of production. In terms of valuation, the the marketing process adds to the value of a product, in this sense, too, it is productive, for the process of production continues, as long as values go on being added to a product. Again, it is with the market demand that the peasant is concerned, hence its importance in agriculture. True, that the marketing organisation does not have a standardised structure, which varies from place to place and from product to product, still the job of buying and selling is distinct from that of production. This twin performance requires specialised knowledge about the market and upto date information about the range of its quotations, present and prospective. That is why the peasant has to entrust these functions to the specialised middleman. Nowadays, more than ever before, the agriculturist produces for the market, and the recent vogue is product-specialisation, rather than the emphasis on self sufficiency. Also there attaches a greater importance to the marketing functions,* because of the larger scale of production and mechanisation with the consequential standardisation. Marketing is, therefore, essential both to farmer and consumer.

The Perspective The above rapid survey about the preliminary aspects of marketing, in agriculture, reveals that the system of direct sales is now dying out it is no longer in vogue even for those commodities, in which it could be justifiably and remuneratively practised. But another problem that is coming to the fore is that of the middleman, who, though condemned by some for the excessive charges that he is accused of making for his services, is an indispensable link in the marketing organisation. The importance of the services, that he renders to the economy and the agriculturist is very great indeed, but this should not mean that he could be suffered to fleece the peasant of his due remuneration nor his contribution, to the economy. Suffice it to point out that the role of the marketing organisation, in a commercialised system of agriculture, is not to be underrated in the present times.

Marketing Services. This section is devoted to a description of the market services, for they are of supreme importance to the understanding of the market mechanism. Attention may be invited to the fact that there are many other services besides the mere business of buying and selling. This is a process of making available to the final consumer the product that he may need; thus these services impart *time utility*, *form utility* and also *place utility* of goods marketed. Time utility is given to goods when the person concerned is to supply the commodity at a certain time; place utility, when the thing is made available to the place where it is required by the consumer; and form utility, when there is processing of the produce, its labelling and grading, all done before the commodities are marketed. This is a purely theoretical viewpoint and one that needs to be supplemented by a description of the structure, as it actually exists. In this context, there may be as many as *seven* different stages: assembling, grading, standardising, packing, processing, storing, transporting and financing. The description of these stages, is given below. Some stages may be dealt with together for the same of analysis, though they still remain distinct processes in the marketing.

Assembling, Grading, and Standardising. The description of the first three stages, may be taken up together. The very first stage is that of assembling, *i.e.* of collecting the produce. Collection is done in such bulk as may be *optimum* for subsequent marketing operations, this means that standardising may govern the assembling process, for the optimum unit of assembling is with an eye to later operations. In respect of markets, which are far off from the central market, and in respect of scattered producers, the assembling operation becomes fairly important, for the producer and the marketeer. Even if that be not the case, the advantage of collecting the produce in bulk could hardly be over-emphasized. The advantage lies in collecting the produce at a certain place because of the convenience of handling quantities in bulk at the distributing centre. The next stage is grading the produce; commodities are sorted out into different lots of uniform kinds, qualities and sizes. It is a link between assembling and standardising. This activity consists of classifying the produce in uniform groups strictly speaking, no two groups should overlap, though range and tolerance are allowed for in the same grade, practically. Grading, in order to be of some value, to the producer and the consumer, should conform to certain set standards, which are accepted and are of recognized value. It is for this reason, that standardising and grading have been dealt with together. The aim is to eliminate the necessity of inspection at the time of

purchase, for the grades are more or less well known marketing is greatly facilitated by the use of grades. Grading would be undertaken, as far as possible, near the place of production for the handling of the rejected stuff which may be unsaleable, this dispenses with unnecessary freight, storage and other such charges. It is plain that grading enhances the value of the produce considerably, for in the expansion of markets, grading is an important step, if undertaken at an early stage it would enlarge the market. It may also be pointed out that the system of warehousing, storage and financing, is based on the use of reliable grades. The next stage is standardising, which is sufficiently important from the standpoint of grading, too. Without accepted standards, grading would be an impossible process. Fixing the standards is a difficult job, and one reckoned with below. Suffice it to say that so important is standardising, as considered from several view-points that certain countries have set up statutory bodies to enforce accepted standards, while statutory standards have also been laid up to facilitate this task. Experience in the west has shown that standardisation is of supreme importance in reducing marketing costs (by eliminating the useless produce) protecting the superior articles in their prices, for the lower and the inferior articles are eliminated outright and/or are sold at reduced prices, extending the sale of the produce (which may be sold by means of description alone) and by widening the markets. All these advantages claimed for standardisation and many more would be examined in the paragraphs below, in an exhaustive manner.

The Standardisation Problems Interest in the standardisation has been roused in the recent times, with a view to reducing marketing costs and also to bring the consumers closer to the products they like to purchase. The experience, gained during the Great Depression has pointed to the necessity of its adoption and popularisation. Another factor has been the extension of World Trade, especially in the *standardised* commodities. Grain trade, in particular, struggled with the multiplicity of grades, it was found imperative to standardise the produce. The demand for uniform standards became universal for the simple reason that farmers, grain dealers, produce exchangers and even manufacturers, clamoured for standardisation as they wanted to be quite sure of the quality of the produce and then there was an international scramble for markets. Two prerequisites were essential to the standardising of produce *first* the nature of the demand, and the implications thereof, and *second*, the qualities of the produce, for if these are legion, the act of standardisation also becomes difficult. Hence, standardisation is only selective, confined to those articles and those qualities of

the produce, which have an intense demand, and for which the consumers may be willing to pay high prices, as the costs of standardisation have also to be covered. Systems of standardisation work according to the standards in consumer's demands. Standardisation started with staples, e.g., wheat, rice, etc., but other commodities such as cotton, and even the perishables, as potatoes, apples, etc. Without referring to the intricacies and technicalities of the methods of standardising, the fact remains that there must be uniformity of standards (and even of containers, in the case of processed and packed articles), and also an acceptance of international standards by dealers. In the first instance, uniform standards prevail in respect of important and much-demanded commodities; these articles are standardised first and then others dealt with. It involves a lot of economic and technical research into the various grades and commodities, and their demand schedules. Close co-operation with the trading and the producing interests may be necessary for the purpose of standardisation and the adoption of standards. Regional variations may be noticed as also all the various differential factors in order that the standards may be such to which all the producers may be able to conform. Comment and criticism are invited to provisional standards, and in the light of the same, the final one is fixed. The accepted standard is to be basis of advertisements, publicity, distant sales, and progressive salesmanship. Technical problems are not only perplexing but also intricate and the shift is to the standardisation of the containers for the convenience of the marketing of processed and packed materials. This is also in the interests of enlarging the transporting function, for shippers could adjust their space and transport facilities accordingly to ensure the full utilisation of the transport capacity. Standardisation has an intimate relation to production, as standards are mainly determined by the conditions of production on the farm: no such standards could be fixed as may be unreal and incapable of adoption by the majority of farmers. In order to be able to conform to the set standards, the farmer would make sure that cultivation proceeds under conditions which may bring out the desired crop of the desired quality. Each step in production, should, therefore, conform to the requirements of the standards, adopted for the crop.

Packing and Processing. The two stages of packing and processing are very intimately interlinked. Attention is devoted to the packing of the product in such sizes and pattern as to be most marketable: this function may be performed on the farm or at a later stage. The objectives are to facilitate the handling of the commodity, to reduce the freight and the storage costs and other marketing costs of a similar nature, to prevent loss by

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deterioration and rot, and lastly, to make the product more attractive to the purchaser. Correct packing saves the product from rot and decay and damage. Packing is, therefore, a distinct service to the industry, as it helps the farmers, the dealers and the consumers. Adequate packing also reduces the costs of storage and transport. This facilitates the branding of the produce and its trade marking. Processing the next stage in marketing system, is concerned with the conversion of the product into the most consumable form, and to preserve the more perishable goods in the form ready for consumption. Another purpose is to make the product more acceptable to the other industries for which is the main raw material. Hence the market trend to increased processing. Indeed, processing is an established industry, subsidiary to the main agricultural industry of cultivation and tillage. It is by processing that the larger scale of farming is adopted, for the fear that the whole of the produce may not be sold is very much reduced. The possibilities and potentialities of processing are being recognised. Processing secures economy for the middleman, the farmer and the consumer, it also makes possible the production in bulk, especially where distant marketing is to be resorted to, and finally, processing makes possible the preservation of the surplus during the height of the producing season. In the light of these considerations, it must be conceded that processing is very important in agriculture.

Storing and Warehousing The next stage in the marketing process is that of storing, the need for it arises out of the fact that most of the agricultural production is seasonal and cannot be readily sold away. The storage of surplus produce which is not disposed off just at the moment is another headache for the middleman. The economic motive, therefore, is to hold over the supplies during the glut period to more favourable selling periods. This fundamental stage in marketing is to the benefit of both the consumers and the producers. Storing, in other words, brings about the adjustments necessary for the post-production period, and for the distributive process. Consumers may demand commodities in more or less a uniform manner, and therefore, storing and warehousing may be essential. It is possible to store farm products on the farm, in the warehouses, at the shipping centres, or in the large markets. It is a service to the farmer and to the consumer, for it expands the market and increases the supply to the consumers. Not that alone, the functions also prevents deterioration and spoilage. Prices are also stabilised in consequence. Storage and warehousing is thus a function, which by taking the supply on to the future, minimises price fluctuations, and tends to even out prices over

a period of time. And regular supplies may be ensured to consumers and markets. The easier and the cheaper the storage service is, the lower costs of marketing of the produce at a certain time. Not that this function is confined to the perishable commodities, but also to all other commodities. Efforts are being made in the under-developed countries to have warehousing done at a national scale, for by this means, it is expected that the peasant would be able to get remunerative prices, as the whole of the produce need not be then dumped on the market at once.

The Transporting Function. From assemblage to selling is performed the function of transporting. For local markets, some sort of transporting may be quite essential as also for the mofussil markets, where the goods are usually sold away. Good and speedy means of transport may lower the costs of marketing. The initial costs of good roads and efficient railways is rather high, but freight charges have to be taken into consideration. The lower the costs of transport, the more possible it is to market the produce in a wider area. But the problem is not so simple, for the size, the weight, the length, and the haul, the perishability of the article and the special arrangements to be made, all these factors enter into the cost of transport and have to be reckoned with. All weather roads, better loading methods, elimination of waste in the hauling of the goods, and reduction of breakage and spoilage—all these factors make for successful marketing by imparting efficiency to the transport system, and reducing the costs thereof, and therefore, of marketing. It is the most obvious service in the marketing process. This function is split in three stages, from the farm to the point of collection and assemblage, from the point of assemblage to the market, and from market to the consumer. All these stages are well marked and could be distinguished from each other. In the first stage, the motive is to collect the produce and bundle it in a form so that it could be manageably hauled; in the second stage, the effort is to sell it to the wholesalers and from that central point to distribute it; the final stage is that of retailing it to the consumers. The costs of transport influence the location of agriculture, and remunerativeness of the same.

Financing and Risk-bearing. From the view-point of this theoretical analysis, this is the most important function. The marketing finance is essential to its success. Financing is required to help all the various agencies concerned in the sale of the produce, its stocking and distributing. Financing is the process which characterises all the stages of production, for

without it the whole work may suffer considerably. A word about the magnitude of financing. It is usually proportionate to the time which is taken by marketing; the longer it takes the produce to reach the final consumer, the higher the finance that is required to same end. In the interests of the economy, therefore, it is so necessary to reduce the time, as much as possible. Grading and standardising may also help financing whose costs are very much reduced in certain cases, even eliminated. These twin processes help in a speedier evaluation of property (the commodities and the produce) with the result that the pledging of the same becomes easier and financing is rendered less costly. Financing may often start, even when the crop is cultivated; the cultivator may be financed for the sowing. And financing continues till the crop is finally retailed away to the consumers. The interest on loans is the cost of financing and this cost is to be shared as between the producer and the consumer. Lending or financing is done by Commission Houses, big dealers, high business men, the *pucca arhatiyas* in India or the Banks. An allied function is that of risk bearing which, in fact, is attendant upon all the marketing transactions, for the loss to the producer may result at any stage or any place. The time element in marketing transactions also adds considerably to marketing costs, and risks. Risks are of two types: the *physical risks* that the produce may deteriorate or perish or damage, etc., and the *economic risks*, due to fluctuating prices. Physical risks are covered by insurance against damage, while the economic ones by such measures, as hedging, future trading and speculative activities. These cover against the risk element are only for the standardised, non-perishables, and not for others. And the risk element is inversely proportionate to the efficiency of the marketing services as a whole. Insurance and hedging are the common protective devices against the economic risks. Risk also varies with the amount of the bulk and the length of the distance over which the commodities have to be carried. Agricultural commodities present a hazardous problem, because of the risks involved in marketing.

Dispersing and Marketing The last functions relate to dispersing, retailing and marketing. The dispersing function is that of distribution from the wholesalers to the retail market. The wholesalers trickle the produce to the retailers, this is the dispersing function, while the retailer sells the produce, the retailing, marketing or salesmanship function. The system of distribution is rather complicated, because of the changing conditions of the economy in general, the working habits of the agriculturists and the growth of population. The distributive and

dispersing system is designed to fulfil the consumers' needs, howsoever specific and specialised these may be. The complexity of the system of dispersing is seen in the development of the modern systems of demand and retailing, too; but this does not satisfy the wider margin between the farmers' and the consumers' earnings. This stage is the most perplexing and expensive, and presents a baffling problem, one which is linked with the system of demand. But recently, studies have been made of the systems of consumers' demand by experts. The marketing function consists in offering the commodity in a form acceptable to the final consumer. The sale of the foodstuffs is not a little different from the sale of other products, for foodstuffs have a regular demand. Their consumption is much more constant and standardised than that of other commodities, which may have certain peculiarities of sale. They are purchased just before they are to be consumed, for they are highly perishable, and advance purchasing may not be possible because of limited means of the consumers, and because of the lack of the storage facilities and high costs, as in the case of foodstuffs. This is the final-salesmanship function, which needs to be performed in the consumers' interests, but it is easily the most important, too.

The Marketing Functions. Direct sales are only possible where the distance is short and the articles required to be sold, may be acceptable to the consumers in that very form; but generally, a complicated marketing process is involved in the selling of the articles. Farmers may make associations for the purposes of bearing risks and the costs of marketing jointly, and with a view to eliminating the middleman, and adopting the methods of direct sales, efficiently. The middleman's heavy charges raise an important issue, both from the point of view of the farmer and the consumer, as these have to be borne by them. Every reduction in the costs of the middleman's services, inflates the profits of the farmers, while very increase in the same depletes his profit. The share of the farmer is the residual one, hence the overhead charges should be the lowest. These costs and charges are discussed below in details.

Marketing Institutions. In order to perform the functions of marketing efficiently, market institutions have been developed in all countries, in accord with surroundings and environments. In the primitive economies, backward institutions have persisted, while in the developed economies, mature marketing institutions have been evolved. But in advanced countries are found complex machinery and complicated establishments, for the purpose of undertaking the marketing functions. In their assessment lies the key to the proper understanding of the

market mechanism In this section, are described fairs and local markets, auctions and exchanges, local and trade boards, and futures and hedging A word about the scale is included

Fairs and Markets It appears that the fairs were the first organised attempts at marketing Fairs flourished in nearly all the countries in olden times and are thus of great significance from the evolutionary standpoint The earlier fairs were marked by their periodicity weekly or fortnightly, and they also moved from place to place Even warfare was often suspended for fairs to be held these were 'protected' and safe conduct of the merchants and the dealers was guaranteed Fairs were under the patronage of the royalty They were located at the highways so as to be easily accessible to all people without difficulty In the initial stages these were commodity fairs which later gave way to specialised fairs which marketed only special articles, locally produced or collected Livestock fairs are still quite popular institutions in the agrarian countries like India The next development was sample fairs, which were marked by the exhibitions of samples of various commodities marketed in the region, dealers examined the exhibited samples from various firms, and made purchases accordingly State fairs community fairs and local fairs also developed with the extension of the means of transport and communications The next development was to the perfection of the markets, which evolved in nearly the same manner Public markets were of a national importance or merely of a regional or local import In the simplest form, local retail markets provided an instance and least expensive too There were the diffused and the compound markets where were sold all the wares that may be locally produced or collected The next were other sample markets, exhibiting only the samples this market was wider Agricultural markets do not produce beyond the stages outlined there In local markets, there may be a splitting up into street and specialised markets, so that the extension of marketing activities takes the form of dispersal and specialisation Open markets are found in the older Indian cities, and the rural areas, in these markets there is no regular shed or place for the dealers to stay But it is the closed markets that are in vogue today, for very frequently does one come across large and palatial buildings where all the amenities of life abound and dealers find it convenient to work Municipal markets have also been made to suit the merchants, and are both wholesale and retail ones, especially if the urban locality is a large collecting centre One word more The construction and planning of market-places requires a great deal of forethought and plan-

ning, experience and perspective sense, so as to admit of future expansion. Market organisation makes for better civic sense, for cleaner processing, especially so in the municipal markets, where great regard would naturally be paid to hygienic sanitation, and cleaner disposal of the refuse. Municipal markets are better suited to perishables and sundries.

Auctions and Exchanges. Auctions have become popular, probably due to the easier disposability of the produce, especially the perishables. Held at the collecting centres, they facilitate the work of distribution. They combine the functions of marketing and salesmanship; they make for the collection of supplies and dispose of the produce quickest possible. Often detailed information about foods to be auctioned is given for the bidders to bear in mind. They serve for display rooms, show-rooms and sales rooms. Good auctioning firms perform the services of warehouses, making catalogues, receiving and storing commodities, and sometimes also working as home delivery services. Auction methods of selling have been used for the sale of fruits, vegetables and livestock. Their chief advantage is quick disposal and low warehousing costs. Auctions, in the course of time, became exchanges, by first passing through the evolutionary stage of establishing companies. Exchanges are sales organisations in the central market, devoted to marketing activities, in respect of a certain commodity. They facilitate the sale of those commodities, which are handled by their members, thus their range of operation is rather limited. They provide a place where the buyers and the sellers meet to settle the bargains for that particular commodity. The membership of the registered (legalised) exchanges is confined to the wholesalers, the jobbers and the dealers. Buying and selling take place according to the settled rules of business. In the smaller exchanges, activity is confined to the discussion of the market trends, taking notes and also comparing them. There may also be established price committees, for the fixation of fair prices and the framing of rules for the conduct of business. Exchanges have also been instrumental in establishing grades, and standards, and also initiating information and the inspection services. In another phase, exchanges have also been responsible for settling disputes as between the members amicably and out of court.

Local and Trade Boards. Another development is the rise of local boards, which are devoted to the sale of one product only: these boards meet frequently, but without that products Bargains made are with respect to the commodity which is often standardised and known to all the dealers. Local boards have been common in the U. S. A., where they have also multi-

plied. The board may meet periodically, and fix price quotations, which are often exhibited outside, as the quotations of the board do have a considerable influence on market prices. But it is possible that there may be some prior understanding among the members, and thus the purpose of having the price settled competitively be defeated. But the fact remains, that individual brokers and dealers also depend on the board for guidance in respect of the trend of prices of commodities. Also these boards were under the control of local dealers and big merchants, if this influence were eliminated, the dealers of the board would be highly competitive. Trade Boards, also known as Big Boards, and Specialised Exchanges, operate in central markets and regulate dealings in the wholesale. Boards of Trade, or grain exchanges may not transact any business, but only make and frame rules for transacting business, these rules are recognised by the state authorities. The trade board also collects and distributes a vast amount of trade and market news among members. In its operative room, information is collected and disseminated to members. Future trading is done in the exchange and information regarding the same given. There may be two types of trading trading in cash or spot trading and trading in the futures. Trade in cash or spot trading is done by means of samples that are exhibited, for the commodities immediately available while for futures bargains, are settled for a future date, and the deliveries postponed to a later time, settled upon.

Futures and Hedging Trading in futures is of two types futures and hedging. The futures proper relate to deliveries being taken at some future date, and at a price and according to the conditions mutually settled. They may have to be honoured and deliveries taken at the date specified. But there may also be speculative dealings, which may not involve accepting deliveries of the produce, but only paying the difference as between the contract price and the prevailing price on the date of the delivery. Possibly, under this type of a contract, if made out of consideration and the proper assessment for market trends, and with its full knowledge, there may be secured the advantage of price stabilisation, as the future demand or supply is shifted to the present time, but the greater possibility is that the deal may be a pure gamble designed to bring some sort of unusual gain to dealers, and may give birth to several price fluctuations, instead of being instrumental in stabilising them. This is something that has to be guarded against and that is done by advice, commonly known as "hedging". Hedges may be fixed and the purchaser, buyer or the dealer protects himself against the possibility of a loss. The wise dealer covers

himself against the risk of price disturbance by selling the same produce at the same time with a view to avoiding loss. Similarly, the dealers may "hedge" themselves against losses arising out of their sales by means of buying at the same time at a lower price. Hedging protects them against loss.

The Inference. From the above short and brief study of market institutions, it may have been clear that the markets have been expanding. The local fairs and the markets were the nucleus out of which the modern standardised institutions have arisen and thriven. In this connection, it may also be stated that the market institutions are now much perfected with the result that they may play an important part in the modern agricultural marketing. Even the modern market institutions are of a complicated nature and have to be adapted to suit the local conditions and the local produce, for in the case of the perishable produce, it is the system of auctions that may be found more eminently suited, but in the case of standardised product like grain, the exchanges and trade Boards organisations may be found more suited and hence more successful, too.

Marketing Costs. From the viewpoint of the economist as also that of the farmer, these are of import. The aim is to reduce these costs as much as possible. In fact, the distributors get an increased proportion of the amount that the consumer pays, also a larger amount of the income which the farmer is to get and receive in lieu of the produce that he markets. Inevitably, the distributive costs are heavier in agriculture than in the industrial sector; the reason is the wide dispersion of the producers, the variations in quality and quantity of agricultural produce and its perishability. But, on the other hand, there is the advantage of greater stability of demand for these products and lesser liability to changes in fashions, as may happen in the industrial sector and in manufactured goods. Still, these costs have been rather heavy because of the individualness and the small scale of the unit of enterprise in agriculture. Add to this the imperfections of agricultural markets; in the first instance, some sort of retailing is inevitable in the countryside, where the local prejudices, preferences and regards count for much; and secondly, the scale of operation is also small. Also the consumers' preferences are usually not reflected back in the differential prices for agricultural produce. The producer is unable to anticipate the trend of consumers' demands, with the result that he has to be content with traditional supplies and try to market them; the process may be costly. Again, fluctuations in the supplies from the agricultural arena also account for the high cost of marketing. And

above all, the multiplicity of the middlemen between the producer and the final consumer due to the farmer's lack of organisational ability and his ignorance account for this fleecing

The Distributive Margin Attention needs to be drawn to the margin between the price which the farmer gets and the price at which the product is sold away to the consumer. This distributive margin should be as narrow as possible; most of the marketing reforms and legislation are directed to the same end. The margin between the farm price and the retail price is the distributive margin which varies widely for different groups of producers and for different commodities. Difficult as it is to measure this margin, it is possible to make some generalisations about it. In direct sales the margin disappears, or is pocketed by the producer-retailer. Alternatively known as the distribution costs, it must not be confused with selling costs, which are of any entirely different composition. The issue for the peasant is the lowering of this margin. The farmer is a residual claimant, and would be left with a larger share if this margin is lower. This depends on the number of the middlemen who intervene as between the farmer and the consumer: the larger their number the higher is the distributive margin. The presence of a large number of middlemen leads to what may be described as "waste", the duplication of functions and inflation of the costs of marketing. This point is intimately connected with the question of selling costs, which is discussed below although the distributive margin is distinct.

Selling Costs In a general way it has been pointed out that the marketing costs are excessive due to the perishability of the agricultural produce. Other reasons may be stated in brief: the high costs of assemblage, collection and transport, the difficulties of grading, standardising, etc., in the agricultural sphere, the impossibility of the regularity of the conditions of demand and supply, heavy expenses of storing and warehousing, and the great risk attendant on the perishability of farm produce and the strict limitations of agricultural marketing. The effect of some of the above-mentioned factors is self-evident. Transport costs in respect of agricultural produce are high as the farms are often located in out of the way places and are inaccessible, and due to the primitive character of roads in the rural areas. Also the perishable agricultural produce has to be transported in fast-moving vehicles, this factor alone being responsible for raising costs. Difficulties of grading and standardising have been dealt with above; the costs incurred on this account are much higher than in the other sectors. The bottlenecks of securing a regular supply of agricultural produce arise out of the seasonal character of the industry which is subject to the

inclemencies of weather. Demand is unstable as the gaps have filled in by local supplies, which may be super-abundant. Thus to counter-price fluctuations, the dealer does demand a higher remuneration. Add to it the high storage costs. Because of the perishability of agricultural produce, the costs of refrigeration etc., are also considerable, the farmers may not be able to afford them. And then there are limitations on the scope of marketing of agricultural produce. Apart from the restrictions imposed on the market by the state, an inherent limitation arises out of the fact that the unit of operation is the small scale with the result that the marketing costs mount, especially when the burden of the middlemen is also high: the share of each is still small. And then there are the limitations of finance, that may be available to the middlemen and the peasants, while the economies of large scale could also not be reaped. No wonder then, that the marketing costs are very high indeed. But by the institution of co-operative system of marketing, these costs are being reduced considerably and in certain cases, are being eliminated.

The Middleman's Profits. The middleman issue is quite important, and needs to be attended to in this connection. Firstly, the number of the middlemen is very large, this also raises marketing costs. In the first stage of marketing, the multiplicity of the collection and assembling agencies results in the formation of a horde of middlemen, while in the second stage, too, there is the multiplicity of the retailers and sellers, all of whom share profits, which must therefore rise. Chances of operators overlapping not only in the functions but also in the dealings raise costs. Rationalisation of the retail markets may be brought about by legislation enacted to that end, but it is not possible to rationalise the collections except by compulsory procurements. But from the middleman's viewpoint, it must be conceded that the grading and standardising of the farm produce, as done by the farmer himself is the exception rather than the rule. This work is often assigned to the middleman. Note must also be taken of the exacting and precise demand of the consumer, as it is developing, and that the agricultural produce being unable to meet these requirements, the middleman has to bear the brunt and to make the article saleable to the consumers, he must be paid for this special job. Competition among the middlemen is seldom perfect, with the consequence that the middlemen's charges are often inclusive of monopoly charges. Some degree of local monopoly is more or less inevitable in the conditions conspicuous to agriculture, nor are the farmers equipped with the time, resources, or knowledge to bring about competition as among the middlemen.

In fact the peasants themselves create circumstances conducive to the formation of monopoly by entrusting their business to the same traditional dealer. Also competition, if any, among them is more apparent than real for there is often secret understanding among them, as also the prevalence of rings, etc. *Collusions and secret deals* may weaken even the semblance of competition. Again, the big middlemen are able to influence prices, payable to the peasants, to eliminate effective competition, and charge a high price for their services. In the light of all these, the inevitability of the high charges of the middleman is established. To induce competition among them is a problem both for the planner and the administrator. Exploitation may persist, especially in the agricultural markets, though these may be invisible to the farmer. In the central markets, the middlemen perform a function of importance to the whole marketing organisation. The central market has also an element of monopoly procurement: the middleman who helps the big businessman is paid at the expense of the peasant, to whom the return made is reduced to the same extent. In fact so diffused are the functions of the middleman and so wide spread his activities that his charges, of a monopoly character, have inevitably to be rather high.

Rigid Marketing The fact of rigidity of the marketing organisation and of these costs may also be noticed. The marketing system is incapable of coping up with the fluctuation in respect of agricultural commodities. This rigidity is responsible for the high marketing costs. In fact, agriculture is characterised by several rigidities: so is agricultural marketing. Commercial interests stand to gain from the current agricultural surpluses (even if of a local character), for agricultural produce is sold away at throw away prices. This trend may be persistent as the overhead costs of distribution are ever on the incline, more so in the case of the perishable commodities. Again, these high distributive costs tend to stay, whether the producer's prices are high or low, with the result that the producer is unable to sell off the produce at a higher price, lest the demand shrinks: he has to suffer on account of lower net price. This is the first type of rigidity, the second thing to be noticed is that the distributive system is not flexible enough to permit the passing on of the full advantage of the higher price to the producer-farmer, for the system is characterised by the multiplicity of the middlemen ready to swallow any benefit that may be passed on through them. And there is still another inelasticity: the system is incapable of passing on the advantages of lower price to the consumer even if the producer-farmer were willing to sell a larger quantity at a

lower price. In the fourth place the producer-dealer arrangements and relations are pre-fixed and do not respond to the fluctuating fortunes of the farmer, with the result, that middlemen's charges are also fixed in advance. This is another rigidity, from which the producer-farmer suffers and heavily, too. Still another one relates to the fact that the producer does not want a fluctuating profit on his farm produce, he prefers to have a stable return on his enterprise, here he is in conflict with the dealer's interests with the result that he gets neither a stable profit, nor even a stable price for his produce, in fact this effort of his only serves to depress his price and his profit. And lastly, the cost inelasticity that characterises the farming enterprises, puts the peasant to loss when there is a glut and depressed prices. Ignorance of the commercial aspects of farming and lack of information about the agricultural production, result in the businessman-middleman fleecing the peasant outright. Such is the inelasticity of the farm production that the peasant is unable to adjust his produce to the instabilities in the market, even if he were to realise the superior importance of following such a course of action. Efforts should be directed to increasingly take over the functions of the middleman by means of co-operatives.

The Cost Analysis. Marketing costs are composed of the costs of transport, the costs of packaging, and the costs of salesmanship; this is a rough enumeration of the marketing costs. Costs incurred in publicity, advertising and selling are also included in them. Certain difficulties are obvious about this type of analysis. Firstly, it is difficult to assess the return on the advertising costs, for at one time expenses incurred on advertising may bring in a greater return, while at another time, they may yield less. Much depends on the novelty of the article, or its standardisation; in this sense, agricultural commodities are usually neither new nor standardised. Hence the frequency of advertising and the expenses involved therein (as far as agriculture is concerned) are difficult to estimate. Secondly, the selling costs do not determine the amount of business; this is true of the industrial and commercial sectors, but truer still of agriculture; here too the allocation of the selling costs is difficult. And then advertising may not guarantee business to a firm which advertises. In fact, the farmer seldom does the advertising himself, he leaves it to the middleman. Selling costs, in the form of publicity and advertising are based on the expectation that the consumers may be willing to change their preferences, but this question is of not much import in agriculture, for the demand for agricultural products is more or less fixed. Pure selling costs are only a fraction of the marketing costs. The costs of transport, of

warehousing and of storing are rather heavy. Transport costs are high in the underdeveloped agrarian economies, and in the embryonic ones. The costs of storage and warehousing are also quite burdensome there.

The Operational Scale Usually, the operation is on a small scale, this makes the costs of marketing heavy. Generally the costs of storage, warehousing and handling the commodities are rigid, though heavy for the small dealer and the small peasant. The assumption of risks by insurance companies is possible, but here too, the incidence of this charge is rather high, especially in small-scale operations. In trying to secure the advantages of specialists' services in connection with marketing, the small farmer and the small dealer may have to pay much, consequently, some of these services may have to be dispensed with on account of heavy costs, and unspecialised workers employed on these specialised jobs, which are thus performed inefficiently, thus it is that the real costs of grading, sampling and standardising mount up. And then advertising costs may be proportionately lower for the larger scale of farming, but burdensome for the smaller farmer, hence the small-scale operation is unremunerative. Should the farmer seek to eliminate the middleman, the costs of marketing and the overhead expenses would fall heavily on him, for he may have to buy the marketing equipment e.g. the lorry, the store, the grader and the processing machinery, etc., with the result that the small farmer has to incur heavy costs. Thus for the small-scale farmer, the costs are burdensome. In the last stage, the business of retailing for small peasant is costly, usually, it is convenient for consumers to have shops and stores of all varieties near their residence, this multiplicity of unspecialised shops means higher costs of selling. Multiple shops, made possible by the combination of small shops, may be difficult for agriculture, due to its usually small scale. It is only in the stage of transmission from the wholesale merchant that large-scale operations may be found, to the exclusion of the small scale, possibly costs may not mount up. But, here too the monopolistic position of the big merchant, the high businessman, enables him to reap a very large profit. The costs of the marketing operations at all stages, notwithstanding the scale of operation, are quite high and also unfair, especially in their incidence to the peasant, the smaller one.

Trends in Costs Still, certain trends may be detected, in respect of marketing costs, they appear to be towards the decline. The extension of the means of transport and communication to the rural areas, in all economies, makes for cheaper transport costs. With increasing emphasis on grading and

standardising of agricultural produce the costs of marketing tend to be on the decline. And the co-operative form of marketing or group marketing reinforces the same trend in marketing costs. The middleman is being eliminated, especially in co-operative marketing. Since the co-operative form is the most important, a separate section would be devoted to it. In regard to legislation for marketing, the trend may be detected as being towards regulation, and the reduction of the middleman's charges. Howsoever nominal legislation may be, the fact remains, that it invariably is effective in reducing the costs of agricultural marketing. With growing consciousness about high-marketing costs, the highhandedness of the middleman, and the exploitation of the poor peasant, the farmer no longer falls a willing prey to the same. Another fact is that standardisation of weights and measures, especially in the primitive and the backward economies, has led to the narrowing of the range of malpractices.

Co-operative Marketing. As a remedy for the excess of the middleman, the system of co-operative marketing is being adopted widely, so as to eliminate him quite and lift away the burden of his charges. Incidentally, the aim is also to minimise the burden of marketing charges. Co-operatives have become an essential part of the marketing machinery, as also an offshoot of the general trend in community development. The co-operative movement in agriculture may take many forms ; the most important is relating to the sphere of marketing, in so far as the economic well-being of the peasant is concerned. The success of the co-operative movement in the field of marketing is pronounced and prominent in the backward economies. Distribution of the produce is undertaken by the co-operatives at either end, but more of this after principles are understood.

Fundamental Principles. The principle of mutual advantage is the most basic one. At least *three* important and distinct principles govern the co-operative societies: *first* the principles of the democratic control of the management, secured by the rule of one vote for every member; *second* that of restricting the dealings to members, preferably, and *third* that of sharing the profits (surpluses) on the basis of equality and not merely on the basis of the capital invested, for which a nominal rate of interest could be paid. The democratic principle stops the domination of one section over another, while that of restricting the activities to members, results in sharing the benefits mutually, among the members alone to the exclusion of the outsiders. And the observance of the third principle assures

equality among members and excludes domination by the moneyed members, or any slicing away of the profits by them on the basis of the investments. Strictly speaking, a co-operative society does not make any profits but only earns a little surplus over the running expenses, for the purpose of buying equipment and creating a reserve. But the one general principle that pervades all co-operatives is the one of mutual self-help, this appeals to the co-operators and when put into practice benefits all the members of the society. Another point is the elimination of the middleman, his profits being shared among the members of the society. All the five principles of co-operative association are applicable to the marketing types. The primary aim of co-operative marketing is to eliminate the middleman, and do away with his excessive charges. The next in importance is that of mutual self help, and then come the other three principles, as enunciated above. These are the fundamental principles.

Forms and Types. Co-operative marketing could function at either end of the marketing process the producing or the distributing end. Producers may form a co-operative society in order to market their produce cheaply, while the consumers could also do the same with a view to buy cheaper. Thus the two more important forms are the producers' and the consumers' co-operatives. The two forms need not be mutually exclusive, but one may shade off into the other. The producers' co-operatives, though working from the production end may extend right to the distribution end, while the consumers' co-operatives may go back to the production. Starting from the retail end, the C W S (in U K) has worked back to the producing end. More usually, the farmers' co-operative societies only attempt to specialise in one branch and not in all the different processes. And without having any experience of the distributive and retail processes, the farmers' co-operatives have not achieved that success which was expected of them. In fact, consumers' co-operatives have been more successful in purchasing the bulk from the farmer than the producers' co-operatives have been in getting the same marketed. In producers' co-operatives a purer form of co-operative marketing—the elimination of the middleman is often not realised, immediately, for the middleman is not sought to be completely eliminated but the aim is to reduce costs of the services that he performs. To remove the inefficiency of the competitive system without letting other defects creep in, is the objective. Haulage of the produce may be done jointly, also the different selling costs may be shared jointly with the result that costs per unit of the commodity may be lowered. Permanent equip-

ment may be purchased in the pool ; this may enable grading, sampling and standardising at lower cost, but the effects of co-operation are important.

Effects of Co-operation. It is possible that in the initial stage, the effects may be to raise the costs to the producers and reduce the profit margin for them. But this may be followed by raising the produce and the earnings. The first impact in the increase of initial costs is due to the fact that the equipment and the organisational expenses may have to be incurred by the organisation at its inception; certain transport vehicles have to be purchased, certain grading equipment to be bought, certain storage facilities to be procured, and also certain other initial expenses to be incurred. It is, therefore, that the initial impact may be to raise costs, but only to lower them at a later stage. This is a temporary phase in the life of a co-operative and may soon be over, though this may frighten the peasants into giving up the membership and the venture; but its tenure and life is ensured over a long period, if the first frustration is resisted. Larger numbers of co-operatives may inspire confidence among the peasants and enthuse them with a spirit of self-dependence. This may have a snowball effect, for if the co-operatives succeeded in one locality, the contagion may spread to the other localities, too. Another effect may be to increase the area under the croppage for the simple reason that the higher returns to the cultivator may provide an incentive for him to cultivate more crops with larger acreage. Thus the ultimate effects may be to raise the produce. Another noticeable point is that the co-operatives may have the effect of standardising the demand and supply of commodities, and sales to the consumers of the standardised articles at reasonable prices. Through co-operative marketing, the corrupt practices of the dealers and the middlemen may be minimised, who may thus like to rehabilitate themselves by following cleaner methods.

Advantages and Merits. This system has certain pronounced advantages, which may be noticed. In the first instance, there is the replacement of the sordid profit motive by that of service and mutual self-help. The profit motive is not necessarily of danger to the social set-up, but this by itself is responsible for the high costs of marketing, and is instrumental in making the marketing organisation unprofitable to the producer. The advantage to the members arises out of the motive of self-help and of service : apart from being useful to members, it is also instrumental to the integration of the rural society. The aim and the method of the co-operative society is to sell the

produce at as high a price as possible, and make the return to the members the highest. The deduction made is not the middleman's high charge, but the barest marketing costs, which are divided proportionally among the members. The second set of advantages arise from the fact that the co-operative organisation may take up grading and standardising which an individual member could not have done in isolation, because of the heavy costs involved. In addition to grading and sorting, the processing and other functions of the marketing system may be taken up and with happy results. Thus out of the chaos of disorganised and fluctuating supplies may be brought order with an advantage to the consumers and the producers. Indirectly, co-operatives have compelled the middlemen to perform these services at competitive rates, thus extending the range of their usefulness to the non-co-operative sectors. Co-operatives have also been successful in eradicating such abuses, as deadweights, wrong cultivations and cheating, practised on the ignorant and hard pressed farmer, eager to convert his produce into cash at the very earliest. In other words, the bargaining position of the farmer is strengthened, for if he were to deal singly and by himself, he would be at the merchant's mercy, but when he acts in collective unions his bargaining power is considerably increased. In the spheres where the competition as between the middlemen has degenerated to a mere show, the co-operative society has been able to induce real competition among them with the result that remunerative prices have been invariably secured for the peasants. Other trade benefits have been gained, such as the arrangements of credit facilities, at cheap rates, and advances and assistance from the state and lower transport rates. Another gain is that the co-operative society is able to ensure a regularity of demand for the produce, by making pre arrangements for its disposal. Also, the society is able to control flow of the produce to the market by the special methods. It is, therefore, recognised that this service of the co-operative society is very significant, for the income of the farmer suffers on account of the fluctuations of demand and supply of the produce, and the society is able to regulate it. There may be glut, which may cause a fall in the price to an unremunerative limit, and thus the co-operatives avoid. Another advantage is the integration of production with marketing, the divorce between the two has resulted in the farmer losing his profits, which are pocketed by the middleman instead. In this work, the society is also aided by the contract system the members market their produce through the society alone. This strengthens the society in its transactions, it is in a position to induce the farmers to produce the better quality of the product, thus

the efficient producing is coupled with efficient marketing with the result that gains accrue to the farmers and the consumers alike. The co-operative society by ensuring loyalty from its members, is in a position to exercise its monopoly powers in respect of the produce, it seeks to market as it is able to pool the produce from its members. It can also bargain with dealers and wholesalers on a footing of equality and sometimes of superiority, for it has unique advantage of holding all the stocks which could be available in that locality. The wholesalers, assured of a regular supply and continuous flow, are appreciative of its services and like to deal with it. Adjustments in demand and supply are easier in case the co-operative society, as the members could be informed in advance of the trend of demand. Even directly could the consumers' preferences be passed on to the producers who, then produce to the consumers' specifications. Not this alone, co-operative marketing societies, by withholding the supply for a short time may lever up prices and may give the farmers the much-needed advantage, which they could not otherwise hope to get. But the advisability of the methods from the larger social viewpoint has been questioned. Still, whatever the social justification of the method be, the fact is that this is of advantage to the producers and the poor farmers, who stand to gain out of the temporarily levered up prices. And then the co-operatives educate the farmers about the market mechanism, something, which would be of use to him in the long run. And above all, the success of a co-operative marketing society spreads the infection of co-operation fast enough in the locality.

Dangers and Demerits. Co-operative farming is difficult to introduce in regions, where mixed farming practices prevail, for small bulk may not be profitably taken up for wholesale marketing practices ; it would not be profitable to farmers for the scale of operation could not be enlarged by the addition of tiny bulks for the purposes of marketing. It would be more economical in mixed farming to resort to the method of direct sales, rather than seek the assistance of the middleman, for the costs of marketing functions as chargeable to farmers would be very heavy indeed. The large-scale of organisation has advantages, which accrue out of co-operative marketing organisations ; it is difficult to operate among the far-flung and scattered producers in the countryside. It would not be wrong to suggest that the costs of collection from such a multitude of farmers, scattered in different villages and hamlets may be high, and raise, instead of lowering, the costs of assemblage and collection. If the bulk of the produce is to be disposed off in the distant markets, co-operatives may prove useful, but if the bulk is to be con-

sumed near the producing centre that would result in the multiplication of the costs, direct sales methods would be more useful and remunerative to adopt. And co-operatives may fail to thrive on this strongly individualistic nature of the peasantry (usually the farmers are highly individualistic, and this fact conflicts with the co-operative motto of "service before self"). Many a co-operative has floundered on the rock of mutual jealousies, which raise their heads among the members in the course of time. Such bickerings may mount up to actual ruptures, members may decide to leave the society on mere flimsy grounds, as against this the clever country dealer knows how to exploit the situation with the result that once a crack is visible, it is widened the instigation of the middleman out of spite for the co-operatives. The heterogeneous nature of the co-operative enterprises makes it difficult to practise specialised farming and marketing on the part of the co-operatives. Consequently, the co-operative society disappoints ambitions and sanguine members who have pinned their hope on the ability of the co-operatives to solve their problems efficiently. And the adoption of sound business methods on the part of the operators of the society and its promoters, may sound its death-knell, for the pioneers in their enthusiasms, forget all about the business aspects of the movement, and in order to attract more and more members discard the principles of sound business and in their efforts to oblige the individual members run the society in a deficit, making it debt-ridden and ultimately, insolvent. Allied to this factor is that of the lack of knowledge of the methods of co-operation, the understanding of sound economic and commercial practices on the part of the promoters and the pioneers with the result that the control over the whole organisation gets slack and the organisation is characterised and infected with inefficiency. And then mostly, on account of this shortcoming the co-operatives are promoted and pioneered by outsiders, consequently, these organisations, howsoever efficiently and profitably run often fail to inspire confidence among the rural people who are usually suspicious of the efforts of the outsiders and smell a rat in the whole thing. The movement could be run only on the loyalty of the members and not on the nourishment received from outside sources. And lastly, the one rock against which many a society has perished is financial weakness. Hence finances must be strengthened.

The Future With growing enlightenment, the spread of the movement is ensured, for the peasants, when they begin to appreciate the advantages of the movement, tend to sink their individualistic jealousies and bickerings. This adds to its inherent strength, and makes its basis sound. Again, with

the march of time, the resources of the common peasant tend to expand, which in turn, gives the much-needed financial support to the co-operatives. Also with growing specialisation, and the elimination of subsistence farming, the handling of bulks produced by the co-operatives would be of advantage to the farmers and the scale of operation may be enlarged and the costs of co-operation reduced considerably. A word may also be said about the extension of markets, attendant upon the growth and development of communications and transport; this would tend to discourage direct sales, erstwhile beneficial because of local marketing of farm produce. And above all, the increasing recognition by the state of agricultural marketing societies in respect of its stores purchase policies and practices and for concessions offered to them in the form of cheaper and readier transport means, may also encourage the formation of such societies in increasing numbers. The future of the co-operative marketing appears bright.

Market Intelligence. This section deals with an allied subject: the information services about the markets, so essential to the present-day commercial organisation. It is the specialised nature of the market intelligence services that has necessitated the examination of this subject in a separate section, but the fact is that its significance to the farmer, who is in search of income stability is inestimable. It is in this light that a wise peasant is able to adapt his system of farming to the changing needs of the market. The information sought is of two types, the one about the new process of farming, storing and preservation and that about price and production trends in the countries abroad. With growing state regulation of markets, there is greater need for the society and the state to have the complete and the full information in order to be able to formulate correct policies and also to give effect to right practices in this regard. A modification of the existing marketing institutions may be brought about in the light of the facts noticed by the planning and administrative authorities. The state may have to formulate certain policies in the non-agricultural sector, and these policies may have impact on agriculture; this may involve the availability of the complete facts about the agricultural trends in general and the market trends in particular. For instance, in the imposition of the tariff, the states have to be apprised of the trends in agricultural prices, so that its height may be determined. And finally such information may prove a boon to the farmers in making them aware of their weak points, which, therefore, they may make efforts to remedy and eliminate, too.

Farmers and Facts. Farmers may need facts for efficient

discharge of their duties as farmers, that would greatly simplify the problem of farm management. And then the knowledge of market trends would enable them to so manage their production in advance that they may be able to stabilise prices. A correct estimate of the consuming standards of the public should be foreknown, for that would greatly help in assessing the quantity and quality of production. The marketing situation, which has been just discussed above, would be much eased, if the farmers adjusted their production to communal demand, even before it is marketed. The farming operations must be adapted to the trend of production and prices. Careful studies about marketing processes, middleman's services and the costs thereof, would go far to pave the way for the introduction of co-operative marketing in the community. The marketing problem, in so far as it is one of securing satisfactory prices for the farmer could be solved to a great extent by the adjustment of supply to the anticipated demand. This adjustment is to be both with respect to quantity and quality. At the present moment, most farmers cultivate their fields without knowing the market trends, this means that they are only adding to the complexity of the problem of adjusting the supply to the demand and only making the demand and supply adjustments irregular. With a view to enabling him to do his little bit in adjusting demand and supply, the farmer should be equipped with knowledge of the conditions of supply and the probabilities of demand. Not only the quantity of the produce, but also the qualities of the same should he know, the prices at which they are sold, and also the costs of production of the various farm products, so that his competitive strength could be increased. He should be able to interpret changes which are taking place in production and consumption in order to be able to adapt his farming to the changing needs of the day, especially those which affect the course of prices and profits in production. This concerns him very much.

News and Inspection Services The market news services which may be worked out along lines befitting the conditions of commodities in question and also of the farming process, should be within the grasp of the peasant, for whom they are primarily meant, this would be useful to the farmers. Information about prevailing conditions of the national farm produce and potential trends about the same, would be pertinent in this regard. And the news about weather forecasts which may be scientifically prepared in a form intelligible to the farmers, and of use to him especially in countries where greater dependence is on weather and nature, would prove immensely useful to the peasants, for they could at least plan their day-to-day operations in the light of the forecasts and thus eliminate

a lot of waste in time and operational costs in respect of the wasted operations, due to the non-co-operation of the weather. Information about stock positions and respective market is also useful to the peasantry. News services should be either specific in regard to certain commodities or general about produce. Markets and the reports about them may also figure in the news broadcasts for the rural people. Reports may be compiled from rural areas and the factories in order to let the farmer visualise the value of his contribution and enthuse him to put in more and more work. In the light of this information the producer-farmer could decide upon the line of production, its quantity and quality. Before the sowing season, experts could report on the trends in the markets and give information about production and distribution in the local, the national and the world economy, especially in respect of the export crops, and let this information be known to the peasant so that he could adjust crop-production accordingly. The needs of the large consuming centres and factories could be charted and some conclusions arrived at in the light of this analysis, so that the farmer could be guided properly in his work. The dissemination of such select news is advised as could be useful to the peasant, news may also be broadcast in the form of bulletins, to be issued by the authorities concerned in the local magazines and in the local languages. Marketing information officers, if appointed of this specialised job, could supply such information to the peasants as may be of use to them. Each news service should be developed with a certain end in view and information placed in the hands of those in need of it and also able to make use of the same, while others could be taught its use.

Inspection Services. Correct inspection helps him raise the standards of his commodities and also of his produce, while giving him useful information. For instance, food inspection services may examine a certain type of food in the interests of public health, sanitation and nutrition. And it may be possible to invoke this service just for the very nominal charges, thus raising, incidentally the standards of food production in the country, on pain of fines of defaulters. Market inspection may be instituted in the interests of grading and standardising. Especially in the case of the perishables, these services could prove immensely useful, in that these could rescue the public from bad rotten stuff. Similarly, these services may also safeguard the interests of the consumers against fraudulent practices, and injurious adulterations. The producer may also be protected against the tricks of the dealers and the dishonest businessmen, with the result that a good return is assured to

the producer. Inspection may also be instituted for quantity so that the consumers and the producers could be saved from, *fraud practised on them*. Inspection for quality may be potent in standardising grades of the commodities, and for their insistence on their being uniformly maintained. Inspection in matter of packing and distribution is likely to prevent improper loading and packing as does not conform to specifications laid down, thus order may be brought out of chaos. Improper loading and the use of bad containers may be incorrect from the standpoint of the producer and the consumer alike. The inspection services help to stabilise improvements in this matter. Otherwise general deterioration may result as improper ventilation, delay in transit, disease infection. This may be damaging to national health. The regulation of markets is desired from the economic standpoint. If the standards are well known and if it is also known that they are to be enforced, the economy as a whole would gain a lot in the light of the above.

Estimating and Forecasting Attention may also be drawn to *estimating and forecasting in agriculture*, as supplementing market information. It has been pointed out in the above paragraph, that information to be given to the peasant should be based on the forecasts and the estimates made about crops and livestock, fruit and vegetable, by experts on the basis of statistics of cultivation and yield. There is also private estimating and forecasting, in fact all farmers do a certain amount of predicting and on the basis of their own anticipations, they cultivate their farms. By this, they are able to do some better work and incidentally equate their supplies to demand. But this is on the assumption that their forecasting is correct. The farmers howsoever wise, intelligent and educated they may be, are not experts in the line, and may make mistakes in their forecasts, hence it would be better if the forecasts were made by experts and not by farmers themselves. In this context, it may be pointed out that correct forecasts would not only help the farmers, but also the planner in estimating consumption and planning accordingly. Therefore, estimating is based on full and correct information, the farmers could not have all the requisite information about the conditions of crop and livestock, even if they made an effort in this direction. Orderly production and marketing follow the dissemination of correct information about trends in production, and this in turn depends on orderly forecasting and estimating by the proper agency. From the purely marketing point of view, forecasting is relevant to good marketing practices, and also conducive to the elimination of the waste incidental upon defective marketing, that is quite common in the backward and the embryonic economies.

It is, therefore, in the fitness of things that these functions were taken up by specialised agencies in order that the marketing could promote national economic interests. Still this could not be undertaken by ignorant and unqualified farmers, who may be anxious to do something in the matter in their own personal interests.

Agricultural Forecasting. In order to complete this survey, this section is devoted to the importance but neglected subject, of agricultural forecasting. Crop estimating has already been elevated to the status of a science and a great deal is being expended both in the form of effort and money to perfect these services in the West. Special attention is given to acreage, soil conditions the quantity of grain produced and the number of crops cultivated, and their purposes. Earlier attempts in this direction, (and noteworthy are the efforts of the master-investigators, like Lawes and Gilbert) were confined to making estimates of one cereal only. But, later on, these efforts were extended to other cereals, with the result that farm forecasts, being more correct, are useful to the peasant and the planner alike. Crop reports are viewed in the historical perspective to find out, what is commonly known as the "secular" trend. Crop estimates are also made available to foreigners, the advantage is that the production of exportable commodities adjusts to foreign supplies. Crop estimates are now recognised to be of such import that the newspapers feature the daily reports about them, and these receive the attention of special and expert correspondents, posted with latest information.

Objectives and Advantages. The nature of the estimates would depend on the aims set. Estimates and forecasts differ in this respect; in different economies, as the priorities in various regions are varied. In the embryonic economies, the revitalisation of the peasants' resources is the aim, and the crop estimates and forecasts prepared accordingly: in the same economic structure, a food deficiency may persist: economic forecasts would be made to serve this end. It is a question of emphasis, which may shift from one objective to another. In self-sufficient conditions, internal crops estimates are useful and relevant, while in an export economy, a forecast would be made for foreign countries and the crops grown there, so that the home farmer could adjust his exportable surplus in the light of this information. The effort would be to compile statistics and the reports in the light of their advantages to the peasants. In this matter, objectives and advantages are linked; the problem relates to the perspective in which crop estimates and forecasts become suitable. The objectives of crop estimates, are, therefore, determined in the light of economic and agricul-

tural conditions of crops and livestock But generally speaking, the objectives are wellknown, viz., the stabilisation of agriculture and income therefrom These are notable and laudable indeed But other objectives are also to be noticed these facilitate crop planning by the farmer and the planner Crop estimates for probable competitive prices and in the light of these trends, the selection of crops that the peasant should grow with a view to maximising the income from farm are other important objectives, for estimating

Basis, Method and System Attention is paid to the estimating of the future yields of crops, and special methods have been devised in this connection, by the statistician and the economist But this need not be discussed here Crop yield estimates are correlated in the light of the meteorological data which may be made available Variations in the matter of local distribution, the times of appreciations and depreciations in prices, and the yields of crops provide other basic of crop estimates and agricultural forecasts Climatic changes are taken note of, and some generalisations made with the data in hand, so that some general trends may be derived therefrom Investigations may be conducted on the basis of past data, but they are not to be solely relied upon Limitations arise in the matter of basing agricultural forecasts on the meteorological data there are cycles of agricultural production and notice must also be taken of these, when forecasting Agricultural forecasts are made on the basis of the statistical information gathered at regular intervals, from monthly, fortnightly and weekly reviews But the most important thing is checking the data in the light of the day-to-day information and statistics On the basis of these check ups, the averages may also be revised for ten or twenty years, but the modern trend is to shorten the time interval as between the averages Check ups provide an important basis, and must be resorted to often

Crop and Livestock Estimates Regarding the former, it may be said that they relate to the estimates of acreage, yield and production of every important crop on an annual basis Reports are gathered from all the quarters of the country about crop estimates and their production and sowings Sample information is secured about the same Every source of information is drawn from, in order to perfect the same, and make it as accurate as possible Various check ups are devised in the interests of accuracy, the railroad statistics are compared with those of crop movements, reports of the producers, associations are also dealt with the same manner, census and village level workers' reports may also be tapped for the same end, estimates about manufacturers' consumption of agricultural raw material

are used for the comparative purposes. Cattle estimates are made, but the emphasis is on the number of the milk and the meat cattle, as also the hide-producing and the wool-producing ones. It is not a little difficult to attain accuracy in this matter, due to the lack of correct statistics and the widely disparate practices of the breeders. The crop estimates may, therefore, be more precise than the livestock estimates, which may not be so correct. With complete knowledge of correct forecasts, the scope is widened for the stabilisation of prices, of both the cattle and the crops. Different practices prevail for estimating different crops: variations in local productivity are to be noticed. Similarly, the cycles of cattle-breeding are to be taken account of, when forecasting cattle and their products and such things.

Reorganisation Objectives. In the light of the economic and physical anticipations are estimates made of the crops and the livestock. But the whole system must be reorganised in a more co-ordinated manner with a view to increasing the farm income. Forecasting is the basis of wise and discriminate farm management ; its purpose is to guide production along channels of a correct economic balance. On farming is based efficient marketing, and balanced agricultural policies. Reorganisation should proceed according to the above objectives. Other objectives relate to the question of the right utilisation of land, and its apportionment among crops and operations, and the attainment of correct economic conditions in unsettled agriculture, *e. g.*, on the morrow of a war. And forecasting, above all, should enable the farmer to adjust the price trends.

Adjustment and Adaptation. A correct interpretation of agricultural forecasts helps in making adjustments, in crops to be cultivated, and enterprises undertaken. Calculations made by the planners on the basis of prices and their trends are in the light of crop forecasts, etc. ; wage policies, cost of living indices to be framed—these are possible if the forecasting accords to requirements. The competitive strength of a farming system makes it feasible to adjust, but on the basis of forecasts. Adaptations in the probable requirements of utilisation of land for various purposes, prospectively speaking, are possible when correct forecasts are made. In short, the national and the local policies could be founded on the correctness of forecasts and estimates, alone.

Summary. To sum up, the chapter deals with important issues in agricultural marketing, and is of moment to agricultural economist, the planner and above all, the tiller of the soil. The first paragraph gave the functions of the middleman, around whom the whole fabric of the marketing system is spun. The

description of marketing services was detailed in the next section with special reference to its various stages, viz., assembling, grading, standardising, packing, processing, storing, warehousing and transporting. The direct functions were given special consideration; financial, risk-bearing, dispersing and salemanship were also analysed. The next section described various market institutions, fairs, markets, auctions, exchanges, local and trade boards, in this connection, mention was made of the various practices, like the future trading, hedging and other allied devices, adopted to protect the dealers. This was followed by an analysis of marketing costs, the distributive marketing (accruing to the dealers) were scrutinised, as also the selling costs, composite charges on the producers and the profits of the middleman. Rigid marketing was examined, the scope of agricultural marketing was found to be narrow. A review of cost analysis was the next subject, a note on the modern trends in agricultural marketing costs, as in the context of the dynamic view, was appended here. This was followed by a discussion of the different aspects of agricultural co-operative marketing organisation in its various forms and types. Fundamental principles were detailed with special reference to its forms, their advantages and demerits and limitations. Then was thrashed the subject of market intelligence, the importance of facts for the farmers was brought out and also of news and inspection services to the community. The last section attended to the elements of agricultural forecasting, the basis, methods and the objects of the same. A word was also said about the reorganisation of the same, and the consequent adjustments.

Conclusions Certain observations emerge from this discussion. In the first instance, the middleman's services, though costly, were found to be indispensable to the marketing organisation, unless the same were put on the co-operative base. Secondly, various stages in the marketing system were essential to the efficiency of the same. Thirdly, several market institutions were dependent upon local conditions and were the resultant of the socio-economic forces, operative in a certain agrarian society at a certain period of its evolution. Transplanting alien institutions was a hazardous job, attended with uncertain consequences. Fourthly, the inference seemed to be that the system of marketing was more or less rigid in respect of the organisational set-up, and the cost structure. The practical advice was that the element of elasticity be introduced in the marketing system. Fifthly, the prospective view was that the costs of marketing agricultural produce were likely to register a fall, in the light of certain visible

trends about agricultural policies, As a remedy to the chaos in this sphere of agricultural marketing, the advice was that co-operative principles to marketing problems be applied. The one lesson was this organisation be extended in spite of initial difficulties. Eighthly, was assessed the importance of intelligence services to farmers ; ninthly was analysed agricultural forecasting-both of importance to farmers, lastly, adjustments and adaptations.

CHAPTER XXV

ADJUSTMENT BY PRICING

Introductory—Agriculture and Valuation The Theory of Value Demand and Supply. Analysis of Demand Constituents of Supply Value Fixation Price Fixing—Supply Demand and Prices Pricing and Output Shifts in Demand The Pricing Process Prices and Costs—Prices as Costs. Types of Costs Costs price Relations Elasticities of Prices and Costs The Dynamism of Price Cost Changes Pricing and Markets—Competition Types and Varieties Imperfect Competition and Monopolies Free Price Supports and Instruments Controls and Regulations Efficient Pricing The Price Policies—Objective and Spirit Adjusting the Farm Enterprises Price Patterns and Conflicting Ends Guarantees and Compensations Price Administration Planned Prices and Adjustments Flexible and Multiple Prices. Controlled and Competitive Prices Prices' incomes and Incentives The Market Mechanism—Analysis and Application Coverage and Safety Valves Regulation and Monopoly Price Support Schemes Protection and Stability Planning and Price Reviews. The Price Level—Indexes of Price Changes Agriculture and the Price Level Impact on Agriculture and Economy Summary and Conclusion—The Critique of Pricing Policies

This chapter deals with pricing, which is of relevance and significance to farmers and consumers. It has been said that the science of economics is distinguished from the other social sciences, in that there is the pricing process in economics, as in no other social science. In this chapter would be given a general exposition of the theory of value as it pertains to agriculture. Next follows a succinct account of the process by which price fixing is done in the agricultural sector detailed attention being focussed on the cost-price relationships, which are of significance in the pricing process. The role of the markets in the matter of pricing is brought out in the next section, with a concluding paragraph on an efficient system of pricing. Then would be dealt all the various aspects of price policies, with special reference to the administrative issues and incentives that an efficient policy may hold out to the consumer and the producer. Adjustment through prices is also discussed. The market mechanism, in all its phases, would be covered and attention drawn to regulation and the "safety valves" in agricultural markets. The price level and its measurement is the subject of the last paragraph which is followed by summary and conclusion.

Introductory. In this section is surveyed the problems of prices and valuation, which are important from the agriculturist's point of view. In brief outline, the section may be summarised thus the inter-relation between 'valuation' and

agriculture, followed by an exposition of the general theory of value, an analysis of the forces of demand and supply with special reference to the fixation of value as from the agriculturist's point of view. It may be stated that the valuation and the pricing processes are significant in an exchange economy, for the simple reason that they are the means by which outside forces of an economic character play their part in farming production. The whole complexion of farming undergoes a change with the impact of changing prices—an important point to be remembered. Two things stand out significant; *firstly*, prices move sympathetically, that is, in a group and more or less in the same direction: *secondly* that certain prices of certain commodities may change regardless of the prices of other commodities, these are what may be termed "exceptional" prices. But usually, the first type of changes are the more frequent ones, and have a wider impact on the general economy.

Agriculture and Valuation. All the above when taken into consideration, pose the question as to how far valuation of the different commodities affects the agricultural sector. In fact, the problems raised by the marketing of agricultural produce are solved by pricing. In this connection, it would be wise to concede the point that this system is a guide to economic activity; to agriculture, therefore, pricing is very relevant. In the working of the free price mechanism (in the agricultural sector) must be considered the influence of prices on demand, and *vice versa*, as also its impact on supply and *vice versa*. This fourfold analysis is a prerequisite to a good understanding of the problem. It needs to be emphasised, however, that in practice, these relationships are inextricably and indistinguishably interlinked and interdependent; and as between themselves, form a complex phenomenon of the agricultural system, which in the present age, is much price-ridden. Prices are regarded (by economists) as the external and monetary expression of the forces which govern and determine values. In this connection, it may be pointed out that the process of valuation in the realm of agriculture is not a little different from what it is in industry (where the problem of storage does not arise) though it does face the agriculturist, who produces articles of a perishable nature. Hence, prices in agriculture, have of necessity to be short-period values. This distinction raises complex problems in agricultural pricing and valuation. Thus agricultural pricing and price-making is of a different character from what it is in the general economy. Not this alone. Another consideration of moment is that the products in agriculture are of basic importance, because they are raw materials and food products.

The Theory of Value. The theory of value is an important

part of the general economic theory. Briefly put, this is an explanation of the pricing system, price being the money translation of values. The function of the pricing system is to guide economic activity and make for an understanding of the guiding forces in agriculture. The principle on which pricing is based is threefold, when more of a product is marketed at the same price, its supply tends to increase, while the demand may not. When the price falls, the demand extends, while the supply contracts. Secondly, when the demand for a product exceeds its supply, its price would rise, and when the supply is greater than the demand, the price tends to fall. In the third place, when changes are brought about in demand without similar variations in supply, price movements follow demand. Similarly when supply varies without corresponding changes in demand, the price would react to changes in supply. This threefold principle may be styled as the essence of the theory of value. The first proposition gives expression to direct reactions of sellers to a change in price, as also the reactions of the buyers, who act differently from sellers. The reason is clear, it is *beneficial for sellers to increase their supplies when price rises*, in the hope of getting higher profits, for the cost price difference is widened. The buyers, on the other hand, do not react in the same manner, for it is not to their advantage to buy larger quantities when prices are rising. The second proposition emphasizes that pricing is the resultant of scarcities which again, are relative in their nature. The comparative behaviour of the forces of demand and supply is brought about in the third proposition, above. The underlying assumption is that the price-fixing mechanism works under conditions of free and unfettered competition. In agriculture, there are four distinct relationships, the influence of demand on price, the influence of price on demand, the influence of supply on price and the influence of price on supply. What are the components of demand and supply? In this connection theorists have distinguished between the 'long' and the 'short' periods, it is proposed to stick to the traditional method of treatment, and analyse the demand and supply accordingly.

Analysis of Demand It may be well to analyse the forces of demand first, not only because they exert a stronger influence on price determination, but also because it is demand to which supply tends to conform in the long run. The demand for a certain good is the schedule of quantities that the buyers would be willing to purchase at possible prices at any period of time. The demand for a certain commodity is said to have increased, when people buy more of that commodity at the same price, or they are willing to pay a higher price for the

polist acts in a different manner, for his aim is to earn the best profits, he resorts to *product differentiation*. Under conditions of imperfect competition, the actual demand may be different from the *estimated demand*. Hence demand is complicated in nature and complexion.

Constituents of Supply The motives of the sellers are not the same, as those of the buyers. The sellers try to obtain the maximum profits, and if that be impossible they would tend to minimise their losses. In this respect, no distinction need be made as between the monopolist and the seller, selling under competition, the only difference is that of opportunity, which the monopolist gets. In this respect may be distinguished the different types of supply, which are mainly determined with respect to the time element, there is the *market supply*, or *instantaneous supply* (when sellers must dispose of all the stock). The second type is the *short period supply*, when production is by means of such plant and equipment as is already in existence. This supply is not so rigid, it is capable of slight expansion or contraction. And the next type of the supply is the one that takes into account the setting up of new plant and equipment either to replace the present ones or to add to their capacity. Another type of supply is the outcome of the conditions of progress over a significantly long period. In this connection, notice must be taken of the seller's *reservation price*, which is the lowest price, below which he would not like to charge. But more perishable the commodity, the lower is the reservation price he would fix. If goods are less perishable, then what counts is seller's estimate of the future, this would fix his reservation price. This is of interest to the agriculturist, whose reservation price could not be pitched high. Another related factor is the anticipated length of time, the goods would have to be stocked before their sale at the estimated reserve price. And then is taken into account the seller's need for cash, if his need for cash be inelastic, he would lower his reserve price in order to cash his commodities. And the determinant of the reservation price is the length of time that new supplies will take to reach the market, the agriculturist would fix his reservation price accordingly. In regard to monopolistic conditions, supply undergoes a change. *product differentiation* may act as a partial deterrent to both the extremely high and the abysmally low reservation prices. In times of falling prices, the reservation price need not depress, while rising prices may not raise it high enough. And the more perfect the monopoly, the higher is the reservation price pitched by a dealer. Same could also be said of substitutes, for more numerous the substitutes, the lower would be the reservation price. And there are different

reservation prices for different types of stocks, for this in part, may be due to the seller's own demand for the product for his own use. And previous costs may influence reservation prices, as this would be (more often than not) its lowest limit. Supply schedule is a schedule of the different quantities supplied at certain prices. There is the elasticity of supply, as of demand; though this is a direct variant of price.

Value Determination. In the light of the above facts, the determination of the value should be clear. Prices are determined at the point where supply and demand schedules equate each other. Under conditions of perfect competition price equates demand and supply. This is self-evident, in view of the fact, that there is competition as between sellers to sell their goods, and also as between the buyers to buy them. Any cut in price would attract customers to the cheaper seller while a rise in price brings about a shrinkage of demand. Market price represents the position of equilibrium as between demand and supply. The marginal buyer and the marginal seller are the persons, who act when prices are falling or rising. Competition among sellers would force price down, while among buyers it would force prices up. The marginal buyers are those, who may be induced to buy if the price falls, but would withdraw if it rises even a little. Similarly, the marginal sellers could be induced to sell only if the price rose a little, but not if it fell; their reservation price is just equal to the market price. In regard to the assumption of the perfect market it may be said that it is one, in which buyers and sellers are aware of the market conditions, and of demand and supply; such a perfection of awareness could not possibly exist. In this perfect market there is no product differentiation, nor differential prices. It is only the primary products that may exhibit a close approximation to this type of a market, for the produce is highly destructible. In actual practice, there would be few markets that may be "perfect"; there would be sales either above or below the *true* price. Still a bulk of deals would be struck at a close nearness to the market price. In the long period, it is the conditions of supply which determine price. Under conditions of pure competition, price would respond to the demand factor, because of its relative inelasticity. Under competition, this price would rule, while in monopoly, product differentiation may persist and determination of price is on different basis. The elasticity of demand for these products is less than what it is under competition; also there is the effect of the price policy on sales, and then the long-term effects have to be evaluated, while the prices of the differential products tend to be static.

Price Fixing This section pays closer and more detailed attention to the conditions of demand and supply as they concern price fixing. It is to be understood that the equilibrium may be short run or long run. In the former, price is fixed more according to the strength of demand. Durable and perishable products are distinct, in the case of the former, the price would equal marginal utility (the determinant of demand), while for the 'durables', it covers costs. In the long period (partial) equilibrium, conditions of demand tend to colour prices more strongly in this case may be distinguished reproducible and rare commodities, for the former it is costs which would approximate to prices while for the latter it is the influence of demand that compels buyers to pay fancy price. Under monopolistic conditions the combination which yields the highest profit determines the price the marginal revenue is just equal to price. Under conditions of imperfect competition, prices may differ from one firm to another, and products may also be differentiated. In this type of a market there are various points of equilibriums and there are multiple prices.

Supply Demand and Prices The relation between prices, demand and supply, has to be underlined, for the fact is that the three are interlinked intimately. With the demand for any product being in excess of its supply, the price would tend to rise, and with the supply being in excess of demand, the price would tend to be depressed. This relationship emphasizes the fact that price is the resultant of relative scarcities. The second relationship is between the variations of demand and supply in their impact on prices. The facts stated are that the extension of demand, as also its rise, without a corresponding rise or extension in supplies would raise price, while a rise or extension in supply without a change in demand would depress prices. This twin fact means that the factors and the forces of demand and supply influence price changes. If supply increases more than demand does, that would normally mean a depression in prices unless goods are conserved and stored at a low cost. Similarly, an increase of demand, more than that of supply may raise price, unless the consumers have very high elasticity of demand resort to other substitutes, or postpone their demand. The third fact is more important still, it enunciates that a rise in the price of a product tends to encourage its supplier but tends to discourage consumer. In this respect it would be correct to point out that this does not apply to prestige price, in the case of certain commodities, which have a prestige price demand falls off with lowering price which would no longer serve the purpose of distinctiveness. Nor does it apply to abnormal conditions of demand and supply, in the event of rising prices, it may be that consumers rush their

purchases lest prices rise still further; while in the case of falling prices, the anticipation is that the prices may be reduced further, and it may pay to withhold purchases. For a more detailed examination of all these points, it would repay to consider the fourfold relations between prices and supply; and demand and prices.

Pricing and Supplies. The law of supply states that supplies vary directly with prices; the higher the price the more would be supplies be stimulated. In agriculture, supplies tend to be rather inelastic, and the adjustments may not be possible when the prices are on the decline. Consequently, the level of agricultural output remains rather stable in spite of price fluctuations. The supply of the agricultural produce is not insensitive to the price changes. Changes in relative prices in agriculture, would reflect in supplies and output in the number of producers, and in acreages and operations. This is true of the number of individual peasants, the farmer may only change the mode of operation, may choose to become a live-stock breeder instead of remaining a cultivator, but here, too, the change is rather difficult to effect. The fact stands that there is a greater mobility of factors as within agriculture, rather than between agriculture and other industries. It may be conceded that the organisation of agriculture may possibly be upset, with a switch-over from one type of productive activity to another. Hence shifts in prices need not bring about shifts in agriculture, for the simple reason that difficulties may arise in respect of equipment or labour, etc. And then there is the time element, which is to be taken into account when switching over from one type of production to another. Most of the changes in agriculture could be effected in the long run only, and this is a deterrent to the changes being made. And then the time lag in agriculture may also be considerably long for the nature of responsiveness of agricultural produce to price variations is different from that of the industrial goods. The response to changes in the prices of crops is greater than in the case of livestock, which takes longer to reach the productive stage. Similarly, switch-over from tillage to pasture may be more prolonged, than the one in the reverse direction. In certain agricultural produces, the farmer's responsiveness also overshoots the mark with the result that supplies are in excess of the market demand. Thus miscalculations and losses may often accompany adjustments made by peasants to changes in prices. And it is also possible that the result of price changes may not be to the peasant's advantage. In the first instance, there is lack of price-sensitivity on the part of the family-farmers, who treat farming more as a mode of living, rather than a profession or an economic undertaking. There is

general conservation and habitual inertia. Also there is over-emphasis on the reliance on traditional and time-tested methods of production, and an appreciation for continuity. In the second place, the decision to change productivity of any line of operational undertaking may involve a reconsideration of the cost-structure, the complementary and the supplementary character of the production on the farms. The peasant has to assess financial aspect as a whole, and not the impact of one change. In economic terms, it is the *opportunity costs*, that play an important part in farm production, than they do anywhere else. The farmer responds only to present prices, seldom to price trends, this also brings about a time lag. Price changes could influence the prospective produce, and not the present market stocks. The marginal producers tend to gravitate to marginal farms, which go out of production, but not so soon. In so far as supply is having an influence on price it may be pointed out that the changes depend on the composition of the costs, which may or may not be capable of responding to prices. Hence, peasants would have to do a lot of estimating, but many items could not be assessed correctly, there is the difficulty of estimating the costs of the joint-products. The biological character of agricultural production is another handicap in this readjustment.

Prices and Demand In this connection, attention need be drawn to the influence of price on demand and the elasticity of demand, for agricultural products. Elasticity and inelasticity are measurable. The demand for agricultural products, taken as a whole, is generally regarded as inelastic, this means that variations in the prices do not much influence demand. This is only a generalisation, which has to be amplified in detail. The assumption is that agricultural production is confined mainly to cereals, raw materials and the necessities of life. The demand for the "necessaries" of life is more or less inelastic. In the case of a rise in the prices of the necessities of life, an economy would be effected in the demand for luxuries and comforts. The demand for food is inelastic. But food is not sold in the market as a single standard commodity there are many types of it and the range is fairly wide, with the result, that there may be necessary and cheap foods and also luxurious and costly foods. And then to generalise on the basis of food products, alone, would be misleading, for there is the production of *non-food products too in agriculture*. Hence the demand for agricultural products has to be analysed rather minutely. Regarding the presence of substitutes, agricultural products have a wide variety of substitutability, the consumer could demand one agricultural commodity instead of another. Choices as between the different types of staples could be effected by consumers, and if the price of one article in a

group of the same type of articles rises, the consumer may resort to the production of the other one. Substitution takes place, especially when food habits are not rigid ; it is only the total demand that may not register a perceptible change. And then have to be considered the number of uses to which these products could be put. The demand for them would tend to be elastic, for the simple reason that the range of usability is wide. Agricultural produce has composite demand. An inelastic demand for certain agricultural product in one use may be offset by the elasticity of demand on the part of the other users of the same commodity, say manufacturers. In the case of monopoly, multiple uses of products are exploited to the fullest. The demand for farm products is derived from the demand for the manufactured and processed goods for which the raw material is the agricultural produce. The elasticity of demand is influenced by elasticity of demand for the finished products. Hence the inelasticity of demand is also lessened considerably. A word more may have to be said about the relation of elasticity of demand in reference to the extremes of prices ; in the case of relatively moderate prices, the demand is generally elastic. Thus the elasticity of demand is a function of the price-structure, and of differential prices. And this could only be formulated on the basis of price differentials. In the last instance, the behaviour of demand depends on the incomes of consumers, and limited by them.

The Pricing Process. It is to be clearly understood that demand has greater impact in the short run, while supply, greater influence in the long run. In the first place, the consumption of food is influenced by the age, the occupational composition and the income composition of the population. A larger number of children would mean a greater demand for baby-foods, while a large number of manual labourers more intense demand for cereal foods. More people belonging to the low-income group, intensifies the demand for low-priced foods. The income factor, which was analysed at length by Engel, has been summed up in a Law named after that investigator. The more expensive foods begin to dominate the diet as income rises : the shift is from the staples and cereals to the consumption of fruits and fashionable foods. Also, the proportion spent on luxuries inclines with rising incomes. Qualitative consumption takes the place of quantitative consumption, as incomes rise and its distribution favours the poorer sections of the society. This means that the shift in demand is real as a consequence of income changes. The next consideration is that of the number of consumers, and the character of consumption with reference to agricultural commodities. The total demand

for the agricultural products would vary in number, at least roughly so. The habits of consumption also influence demand for agricultural and food products, rigid food and consumption habits, depending on the local social customs, make for inelastic demand of the agricultural produce. With the prevalence of canteens and mass-feeding, the shift in demand for food is recognisable. In regard to food, the demand may be taken as fairly well distributed over the whole year, while the conditions of supply fluctuate seasonally. Experimentation also produces some shifts and change in demand for agricultural products. And significant is the substitution of synthetic foods for natural ones. New uses for agricultural produce are being discovered. Consumption steering is also an important factor the consumption of certain products has been directed into the required subsidised directions. Regarding the influence of supply on prices, the price cost structure has to be modified considerably in view of the fact that the number of producers is large. This question is studied in the next section. Suffice it to point out here that the costs of production of the marginal producer are the costs that have an influence on the pricing process, for the reason is that the marginal producer is indispensable for completing supplies required to meet total demand. But erratic supplies (so common in agriculture) result in erratic costs and erratic prices. The seasonal and fluctuating character of agricultural produce is responsible for making this analysis difficult. Still, pricing is under the influence of demand, which is the dominating one for perishable products.

Prices and Costs This section traces the connection between prices and costs. In the first instance, prices are costs in that past prices become future costs, as also that prices act as costs for certain other materials. The nature of the relation between prices and costs depends on the types of costs in agriculture, a description of the agricultural costs is given. The cost-price relation, the most important problem in Economics of Valuation, would be looked into in the following paragraph. The elasticities of costs, with special reference to agriculture, are analysed in the next paragraph. The dynamic aspect would also be examined thereafter. It may be pointed out that the price cost relations are important to the determination of prices, and in agriculture, where the costs often lag behind prices, the price-cost relation is of supreme importance, it is also in the light of prices that the costs may be formed, but it is on the basis of costs that prices are fixed, both in the competitive and the controlled markets. It is, therefore, that the price-cost relationship has to be correctly delineated. All entrepreneurs want to secure the least cost combinations.

Prices as Costs. Pricing is itself derived from the costs of production and in this respect too, the study of costs repays amply. In fact, the prices of one set of commodities may be the costs for another type of commodities. In agricultural production, particularly, it is the prices of hired labour, manures, feed, cattle, and seed that are the costs of production, which, in turn, are an important determinant of prices; for if the peasant does not even recover the costs of production, he would be very much discouraged and may not undertake the productive operation in the same enthusiastic manner as otherwise he would. In another way, too, the prices become costs; the present prices form an important part of the costs of living, and most of the farming being subsistence farming, the influence of prices on the subsistence standards is significant. Hence costs are old prices, *i. e.*, those prices, which have already been formed, and are now in operation. This continuity of prices and costs persists. It may be pertinent to point out that costs are closely related to prices, and even the outcome of the same. Prices are costs of production in that they are the determinants of the costs of living and are also the future costs of individual goods. If the price of ready corn rises, the costs of the feed would also follow, with the result that it would heighten costs of production. This high price of corn may raise the costs of living, the costs of feed, the prices (wages) the labourers would demand in the light of higher costs of living, and also some other costs of farming. This is how prices get converted into prices, and this is how prices also become costs themselves.

Types of Costs. In this connection may be categorised various types of costs that have an influence on the formation of prices. In the *first* instance, there are two types of costs; real and nominal. The former relate to sacrifices and the efforts undergone in the process of production, while the latter are those which could be expressed in terms of money. The real costs of production do not matter at this stage of analysis, the theory of price on the basis of nominal costs (which admit of measurement) is developed. In this context, only the nominal costs are taken. Another type could be described as "opportunity costs", which induce the units of a particular commodity to be employed in a certain task of production rather than to any other. These costs do afford a comparative view of the cost-structure; for these are the costs which prefer one employment to another. Next, are the *fixed* and the *variable costs*, which also play an important part in pricing. The fixed costs of production remain relatively constant as a total over a considerable range of productive activity. These are the costs of land, rent, interest on mortgage debts, depreciation of machi-

nery, and the cost of the plant, these costs are also styled as *overhead costs*. It is not possible to cover them in the short period. Then there are the *variable* or *prime* costs, which vary with output; the variation is direct to total output; the larger the output, the greater is their height. Next come the *marginal* and the *average costs*. The marginal costs are those which are the result of expanding the output, they are the costs incidental to additional output; marginal costs remain constant under the law of constant costs (returns); they tend to rise when the law of increasing costs (diminishing returns) operates, and decline when the law of the diminishing costs (increasing returns) operates. To a different category belong *average costs*. This type is important because in the short period, the average variable cost is covered by the entrepreneur. And then are *selling costs* or the costs incurred in the process of selling, including the costs of publicity, marketing, and advertisement. Costs may be elastic or inelastic, they are elastic if they vary with prices and the changes therein, they are inelastic if and when they do not follow price trends nor change with them. It is with elastic costs, that the output is adjustable according to changes in production, while they would be inelastic ones, if they do not change. In the long period, all costs are more or less elastic for all costs do register a change with price changes. There may be adjustable costs, which could be adjusted to price structure, the adjustable costs are also elastic ones, while the inelastic ones are unadjustable.

Cost Price Relations The cost price relations are the most important in the theory of value. In this respect, the short period price covers only the costs, the variable costs of production. Unit price covers only the average variable costs of production, for it is not possible that the total costs be covered by the producer in the short period. In the long run, the aim of the producer is to cover both the costs of production: the prime (variable) and the fixed (supplementary) costs of production. But this generalisation has to be modified in the agricultural sector where conditions are not a little different from those which obtain in the industrial sector. Agricultural production is distinct from the point of view of the ratio between the prime and the overhead costs. In the agricultural sector, the prime costs have a low ratio to the overhead costs. It is the previous costs that are important and must be paid in the present if the farmer has to make his occupation remunerative. It is not possible that the overhead costs be modified by a peasant, for even if he suspends production, overhead cost would still continue to be a charge on his enterprise. Hence it is that the overhead costs form an important part of the total

farming costs. In fact, the division between the prime and the overhead costs is a matter of time, for in the very short period could one dispense with selling costs (which in this case form prime costs) by resorting to direct selling. Other costs would have already been incurred, and paid out: the peasant is only a residual claimant. Other prime costs, the wages of hired labour, the feed for cattle, fertilisers and fuel for power-driven machinery, and such other costs which have to be incurred in production or in operation, could be reduced if the output is curtailed. In the *intermediate* period, there are some such costs, which, though independent of output, could be slowly curtailed, and treated as prime costs. These costs are incurred in the purchase of stock, labour and feeding stuff, and machinery. But then must be noticed overhead costs, for buying land, draining and fencing it and constructing farm buildings. In agricultural earnings should be distinguished the wages of the peasant (which have to be treated as overhead cost) and the income of the peasants family which could be treated as prime (adjustable) costs. It is possible that in the off season the members of the peasant's family are dispensable; at least the amount of the labour they put in could be lessened. One more item needs to be considered. If the farm is not kept in cultivation it would grow weeds, and this would mean incurring extra costs of clearing the land: the importance that he attaches to this would depend on his expectations of future prices. These costs, he would treat as a deduction from the prime costs. Agriculture is different from industry, for the machine deteriorates more when it is worked, while land requires reclamation when it is left uncultivated. It may be pointed out that these costs differ from place to place; but generally speaking, the larger the undertaking the greater is the amount of specialisation that comes about, and the more important are the prime costs. But farming is a small-scale undertaking and the farm, a unit which employs all sorts of productive processes and combines all the stages of production. In this state of affairs, (the small unit of agricultural production), the prime costs are rather insignificant. Prime costs get more important, when the costs of fertilisers, feeding stuff, hired labour, are high, as they are in large-scale and mechanised farming. In the backward countries, the overhead charges are rather significant while advanced economies with their mechanised systems of agriculture have higher prime costs. Quantitatively, the relative importance of the prime and the overhead costs, could be assessed: they do not constitute even half the total costs. The proportions as between the prime and the supplementary costs, affect output in a dual manner; in the first instance they alter the number of the farmers who wish to move out as price falls;

and secondly, they also determine changes in the amount produced by the peasants. If price falls, the marginal peasants would like to move out of business, but it is difficult to effect changes, for his equipment is of little use outside the pale of agriculture. And the farmer and his family, who have had a training only in the agricultural chores, may not fit in anywhere else. Hence, alternative opportunities for the peasant are few. And the peasant would be prepared to work even for a small return. But when agricultural prices rise higher relatively to other prices, difficulties to increase output are also felt. It is not easy for the peasants to raise the necessary finances or get more land for this purpose. Thus for both types of price changes, the number of peasants and also the quantity of output is slowly adaptable to price variations. Again, the overhead costs, too, are irrelevant to the decisions of the peasant, the peasant is only concerned with the relationship between receipts and prime costs, so as to cover the running costs. It is possible that the entrepreneur farmer would use his farming less intensively, when prices fall, but it is improbable that he could do anything else. Theoretically speaking, prime costs represent a small proportion of total costs, and the saving by reduction of output is small. This small gain is not tempting enough to induce him to curtail costs, and contract his productive capacity. Similarly, when price rises, the trend to expand output, and the gain out of a large price-cost margin may be neutralised by the operation of the law of diminishing returns and increasing costs. Hence there is inelasticity of production in farming because of the price-cost relations.

Elasticities of Prices and Costs 'Regarding the elasticities of costs and prices, it may be pointed out that agricultural costs are inelastic, while the prices rather elastic. In fact, it is not possible that a correct assessment of the costs of production be made in the matter of agricultural production. At least four costs of production have to be taken into account, estimate of the overheads, the costs of the family labour, the supplementary relationships in agricultural production, and lastly the value of farm products that may be used for purposes undefined. In the light of these considerations, it is difficult to compute separately, the costs of farming. And the costs of joint products are also not possible of correct assessment. Most farm products are grown while others are raised and it is difficult to ascertain separately, the value and the cost of these. Since it is not possible to compute the costs of different products, it is still more difficult to find out the elasticities of costs. Only a vague statement that the costs are rather inelastic and that prices are more elastic, is possible. The peasant's share in output is of consequence, for

if his output falls, so does his share; this is a serious and grave matter, at least for him. Under intensive cultivation, changes in the quantity of output are wholly brought about by the peasant and his family. They are guided by considerations of a marginal unit compensating for marginal effort in producing that marginal unit. A reduction in the prices of commodities that the peasant sells, reduce marginal incomes earned by him, but it is not unlikely that this induces him to work less, though it reduces the income of the society. This means curtailing family consumption; it is, therefore, certain that peasants would be prepared to work harder than before to earn the same amount of income. The incentive to work harder arises from smaller marginal income, since only thus could he augment his income, and raise it to the same level. Hence, for a family farm the greater likelihood is that with a fall in prices, there would be more work put in by them, than before. Similarly, if prices rise, the family farmer may work less, since they could obtain the same income by putting in lesser effort. But if a fall in the price reduces costs, output expands. In most cases it would be reasonable to assume, that a change in prices of agricultural products influences the farmer's willingness to work for a given marginal income more than it would alter prime costs. This point is raised in the next paragraph, which deals with the dynamism of price costs changes. It may be pertinent to point out here that the prime costs in farming sector; the elasticity of the agricultural costs of the production would be low: farming costs, on this basis alone, would be less elastic and more inelastic. The system of family and subsistence farming, too, is responsible for making these costs rather inelastic. Regarding prices, it may be said that in the light of a growing elasticity of demand for agricultural produce, price is now more variable and elastic than before. Hence, the anomaly arises, that while the prices are elastic, the costs are not; they have a strange elastic-inelastic relationship. This means that when prices fall, profit margin seriously shrinks, and when prices rise (as was pointed out in a paragraph above the profit margin (which theoretically should have been larger) is not widened; because of the fact that the law of diminishing returns or increasing costs is operative; thus narrowing this gap, and sometimes completely wiping it out. The elasticities of demand and supply reflect on prices and costs: this is the main consideration to be taken into account. Elasticities of prices and costs influence farm output, in that the inelasticity of costs, makes it difficult for the peasant to vary his output. When prices decline, the peasant (who is a residual claimant) does have to work harder in order to make the same income, with the result that the greater supply still further depresses price, thus again reducing the profit margin for him.

The Dynamism of the Price Cost Changes It may be interesting to study how prices, in dynamic conditions, affect the incomes of the peasants. Having underlined, above, the impact price changes on rural incomes, it may be instructive to know what effect cost changes have on the general set-up in agriculture. Price changes may be twofold, those within agriculture, and those outside its pale. The peasant's willingness to work for a given marginal income rather than for price cost differentials is to be taken into account. If a fall in price is due to a shift in demand for agricultural goods that for industrial goods and if the prime factors used in agriculture are not of a specialised nature, then prime costs would be altered appreciably, for factors released from agriculture would find ready employment in industries. The fact is that labour and some equipment, as used in agriculture, is more or less specialised, hence total absorption in the industrial sector may not be possible. A fall in the demand for prime factors would, therefore, bring about a decline in their price, and this decline persists even after their absorption in the industrial sector, as this employment is only partial. The extent of this decline depends on the range of deployment in industries. It may be then said, that in the case of fertilisers, the decline may be very marked and may also persist for long. If, however, the fall in prices is not confined to agriculture but extends to the general economy, it may be difficult for the productive factors to find employment elsewhere. In fact, costs seldom fall as fast as agricultural prices, mainly because of the stickiness of wages. Though industrial labourers may prevent a reduction in wages, that may not hold good in agriculture. Wages are more immobile in industry than they are in agriculture. This also makes for a slow decline of agricultural production. Again, a fall in industrial prices tends to diminish output even in the short period, but it is by no means universally true of agriculture. Prime costs of hired factors form a very much smaller part of total costs in agriculture, and while these costs are usually reduced more in times of depression (in agriculture rather than in industry) they do not rise higher than they do in industry. Hence price movements in industry are more frequent than in agriculture. Farm output is largely dependent on the amount of work done by the peasant and his family, and this work input would be increased rather than decreased, as prices fall. In the short run, however, output is comparatively little affected by price and cost changes. In the long run, however, the impact of price changes may be potent enough to bring about some shifts in supply but this is dependent on the adaptability of the system to respond to changes in the

long run. It is a function of price-cost relationships as also of the nature and the character of the farming system, its elasticity, and its complexion. The proportion that prime costs have to total costs is of a paramount and pronounced importance in deciding upon changes.

Pricing and Markets. This section draws the reader's attention to the relationship as between pricing and markets. For under assumptions of free competition, it is the markets, their nature and character, that determine pricing and its range. The intricacies of prices, competition, its phases and types, are examined here. How are prices determined in free and controlled markets? And finally, the market price? Price variations and interactions, as between the different segments in the agricultural sector, would be studied. The instruments of price supports and price policies have also to be taken note of in this section. What are the various state controls and regulations? And in the light of this, are made some conclusions regarding "efficient" pricing. This section deals with the problem with a view to providing a link as between the foregoing section and the next one on price policies and an adequate description about the role that the markets play in pricing process and price policies.

Competition, Types and Varieties. It would be instructive to detail the various complicating types and varieties of competition. The assumption of free and unfettered competition does not hold good in agriculture in particular and in the economy in general. In the first instance, there is pure competition, under which buyers are completely indifferent as to sellers from which they buy, for same prices obtain for all: lower prices only could induce the buyers to buy from one in preference to another. And the amount that each seller has to offer is only small fraction of the total supply, and a particular buyer is unable to influence the total supply or the total price. Pure competition refers to the qualitative aspect of competition. It refers to competition with standardised products, and the assumption is that, the products sold, are of the same quality. Perfect competition is that situation when perfect knowledge by both buyers and sellers, and the perfect freedom of movement of the commodity and of the dealers (buyers and sellers) obtain. In this situation, the assumption of the perfect elasticity of supply and demand of the factors of production holds. And next is monopolistic competition, with differential products, this is the most usual type that prevails in agriculture. Here the seller determines the supply. While in perfect competition there are not any substitutes for products, in monopolistic conditions even if there be substitutes, for these substitutes are only poor ones.

Pricing is done mainly by seller, and not only by the forces of demand. Thus four different situations might prevail, perfect but monopolistic competition, which is characterised by product differentiation. The second type is one which could be described as pure but imperfect, in this situation, the standardised product is sold in an imperfect market (less than perfectly elastic supply of factors or units of production, due to the imperfections of transport and mobility systems). The third type of competition is monopolistic but imperfect in this situation, product differentiation exists with the imperfections of the supply of the factors of production, marked by price differentiations. And, last is pure and perfect competition. In the agricultural sector, it is the imperfect competition that prevails, and it would be instructive to distinguish as between monopoly and imperfect competition, for it is these situations that usually prevail in agriculture.

Monopolistic and Imperfect Competition In this regard may be detailed reasons for the prevalence of monopolistic and imperfect competition in the agricultural sector. Product standardisation is not possible here. Due to the lack of knowledge on the part of agriculturists, the inelasticity of the conditions of supply, it is imperfect and/or monopolistic competition that prevails in agriculture. Under monopolistic competition, the seller prefers to sell to one buyer rather than another, even though the prices offered by them all may be the same. It is non-price competition, but on the buying side of the market. It is possible that the preference for one buyer to another may be due to the fact that the credit ratings of the former may be better than that of another or that he may be a steadier customer than the other one, or a bulk purchaser. In short, the buyer, who is preferred, is having some goodwill on the buying side, which the other buyers may not have. It is under conditions of monopolistic competition that the favoured buyers would get the article to the exclusion of the others. The favoured customers may also be in an advantage in respect of purchases. In this regard, there may be the *secret rebate system*, which may contribute to the strengthening of monopolistic competition. Imperfect competition may be said to exist when market conditions are of an imperfect nature, the purchaser lacks objective standards by which to be able to judge the quality of goods, or the conditions of the purchase, and choice as between the different sellers may be influenced by considerations other than those of price and quality. Imperfection of knowledge may be another factor making for imperfect competition. Imperfect competition may be said to exist, when the sellers or buyers are not many or when the costs of transporting are high prices charged in

the market are multiple. Marginal revenue is less than the price.

Free and Controlled Markets. To distinguish between *free* and *controlled* markets, the above facts about competition must be borne in mind. A correct understanding of "free" market explains the functioning of controlled markets. And then there is the *regulated* market. The free markets have unrestrained activity and do not suffer from any control or regulation. In a free market, buyers and the sellers are free to act, they have no controls imposed on them. There is the freedom of action, and every buyer, being equipped with facts about the conditions of supply and demand, would act in his self-interest. Obviously, a perfect market has never existed, but a free market may. Not only is there freedom of competition, but also of market operation. In a free market, it is impossible that speculation may persist unhindered. But not so in a controlled market. In a free market there may be no regulation about deals; the only regulating factor being that of pure and perfect competition, which seldom prevails in actual practice. In agriculture, often, free and unrestricted markets exist, with the result that the producer is at a loss. In a regulated market, there is regulation about the conditions of purchase, sale and stock. The weights and measures may also be standardised and the market practices, regulated, either by the state or by merchants themselves in the interests of widening the market and also keeping up their reputation for integrity and clean dealings. Controlled markets are those which have a certain amount of control imposed on them by the state, with the result that certain dealings may be excluded quite and certain transactions also ruled out. These markets are under the supervision of the state and the officials may inspect them off and on, to see that the controls are effective. The controls may have been imposed in the interests of the general economy or for stability of price or on some moral grounds, as for instance, in regard to opium trading. The fact stands that the controlled market is not so wide as the uncontrolled and free ones, which some have described as approximating to conditions of chaos. Regulated markets may only exclude undesirable practices from the pale of marketing, but they would not put down any restrictions on market functions.

The Market Price. In this connection, it may be pertinent to analyse market price in various markets defined above. In the free and perfect markets, the price is determined by the operation of the forces of competition. In the case of pure and perfect competition, price may approximate to marginal utility, (in the short period), while it would approximate to the cost of

production in the long-period. This is the general trend of prices. Under monopolistic conditions, price settles where marginal revenue is just covered by price, or putting the same thing in other words, the price is determined at that point where the profits to the monopolist are the maximum. Under the conditions of imperfect competition, there are several equilibria, which are mostly of a local and a temporary character; hence there are many prices, or multiple price levels. In this respect, may be noticed the fact that the market price is usually taken as the price that prevails in the short run and not the price that may persist in the long, hence it would be idle to speak of the long run price, for that is not the price that is under reference. The market price, under perfect competition, approximates to marginal utility. But one need distinguish as between the perishable and the durable commodities, for in the case of the former, the cost of production does not influence the price, but in the latter, price is not likely to fall below the cost of production, as the dealer can stock goods without loss in value and without any extra cost. In the case of all commodities, it may be well to remember that it is not possible to recover total costs, but only a part of the costs of production, even for durable articles, the producer would try to recover at least variable costs. This means that price per unit must cover average variable costs. But under competition, no dealer could charge a price higher than prevailing competitive price, settled at level of average variable costs.

Variations and Interactions In more realistic terms, it may be appreciated that many are the variations from this above mentioned theoretical view-point, because perfect market, as visualised above, does not exist, nor does a perfectly regulated one. When demand changes, the market price (which is the price that matters for perishable commodities in agriculture) is apt to rise, for the marginal (social anticipated) utility also rises, and when the demand shrinks or falls, the price may also go down for the same reason. As regards variations in supplies, it may be well to think of its shrinkage, when this happens price may not fall, it may actually rise, being unable to meet the requirements of consumers, with the result that competition as between them may intensify, more than it does among suppliers. In the case of an expansion or a rise of supply, this position would be reversed, and the price depressed, for the keenness of the sellers would be more intense than competition among consumers. But if both demand and supply change the relative changes should be compared: if supply changes more than demand does, price would be influenced by the forces of supply, but if demand changes more than

supply does, the forces of demand would dictate price variations. It has to be recognised that the elasticity of demand and supply also enter in. If demand is inelastic, price may also be rigid; but if it is elastic, the price is flexible. When supply is inelastic, price is depressed, because competition between sellers may force their hands; if supply is also elastic, the sellers can shrink their stocks and not let the price fall. Still another factor relates to the laws of production, if the commodity is produced under the law of increasing costs, the price (which is to cover costs) may have to register a rise, while under constant returns costs. Prices (on this account alone) need not be affected, and if it is law of the decreasing costs, or increasing returns, price tend to fall.

Supports and Instruments. Attention may now be drawn to price policies. *Support prices* may be described here, they are announced by the government to support a price (usually of agricultural goods), and these prices may be effective in raising the price level, because these are the prices at which the state may be prepared to buy the produce. This is an instrument which the state may employ for the purpose of price stabilisation, and this instrument (as is brought out in the next section on price policies) is effective in bringing about some stabilisation in farm prices and incomes. Another instrument, that of *forward prices*, also brings stability in agricultural prices. These prices may be announced in advance of the harvesting season, with the result that it is in the context of these prices, that the peasant calculates. The future prices would rule out inaccurate price expectations. The section, below, bring out the relationship as between the two instruments. Still another instrument is that of *guarantees and compensations* from the state, to bridge the gap between the support price and the actual market price. It is incorrect to regard these as perfect, for much depends on the efficiency of a price administration. And the variety is that of *planned prices*, which are the outcome of planning by the proper authorities, planning would be successful only if planned prices approximate to actual ones. Next *flexible prices* are not rigid, but adjustable to the conditions of demand and supply; of course flexible prices depend on the flexibility of the conditions of demand and supply: if the conditions of demand and supply are flexible, resultant price may be flexible, otherwise not. *Multiple prices* are the outcome of the conditions of imperfect competition, while *competitive prices* are usually the same for the same product. *Controlled prices* are fixed by the state, and to these all prices have to conform. Prices when controlled, would be effective only when rationing is introduced, otherwise black markets rise.

Controls and Regulations Controls and regulations may be imposed in order to protect certain weaker interests. In the first instance, there may be controls, of both the ceiling and the floor prices. The ceiling prices the dealer has not to cross, this control is imposed in the interests of the consumers in the times of shortage. And there is the control of floor prices prices may not fall below a certain level, this type of a control is imposed in the interests of the producer so that he may not be victim of unduly severe competition but is assured at least of a minimum price, which is considered to be remunerative. Then there is the control of market transactions in order to eliminate dealing in unwanted articles or undesirable commodities. A control may also be imposed for the sake of stricter regulation, which otherwise, may be ineffective. But this is not all, for controls may also extend to the realm of both supply and distribution of the product under question. But this is considered to be an extreme step and usually, the state does not take such measures. It contents itself with regulations, for the fact is that the control of agricultural markets is cumbersome in view of their dispersal, and such widespread control may mean a lot more of administrative effort. Hence, the regulation of markets is a usual practice adopted by the state, anxious to preserve and protect agricultural interests. Market regulation is designed in the interests of the sellers of food in the agricultural arena, the producer is often ignorant. Market control if effective, would be to the best interest of both consumers and producers but injurious and defective if leaky and will result in the establishment of black markets, and high prices, out of all proportion to the controlled prices. Regulated markets may be established for the purpose of protecting dealers and producers, but without eliminating competition which may intensify, as a result.

Efficient Pricing In the light of the above, it is instructive to know the essentials of efficient pricing. Free markets are decidedly the best, and conducive to efficient pricing if not dominated by sectional interests. But if dominated over by dealers, pricing would be inefficient. The essential of good pricing is one price, for the same commodity, the same standard and the same grade. It involves the constancy of supply and demand as also their regularity, which, in turn implies that the means of transport and communication are efficient. Also that no bottlenecks are there. Storage facilities must be efficient for efficient pricing so that supplies are fairly well spread over. Added to these prerequisites is that of the elimination of price fluctuations which are detrimental to the stability of trading, stock may be held up and not released to the market,

resulting in further fluctuations. And prices should also be remunerative to producers; if they are not, dealers and producers would be deterred in their efforts to market the produce, consequently production of that particular commodity may decline prospectively. "Efficient pricing" means that the prices are not prohibitive, at least in the case of those commodities, which form the daily consumption schedules of the consumers. For if the prices are prohibitive, consumers would refrain from buying that commodity, with the consequential lowering of their living standards. But efficient pricing would not endure if there are heavy and exorbitant market charges and middleman's dues, for either its incidence falls on the consumers or on the producers, or is shared between them. And this would inflate prices or lower the remuneration of the producer. Also efficient pricing depends on the efficient working of markets; but seldom does efficient pricing result from the working of free and unregulated market mechanism.

The Price Policies. In this section are assessed the essentials of price policies and the effects of the same in an agricultural system. The first stage of the analysis studies the objective and the spirit of price policies. In the second stage, the study confines itself to the adjustment of farm enterprises, as a result of price policies that may be followed. What is the adjustment to be made in farm production? One of the objectives of a price policy is that the farm enterprises may be adjusted to prices. What are the price patterns and the conflicting ends in this respect? The state follows the methods of guarantees and compensations for the sake of implementing price policies chalked out. The essentials of price administration is the next topic studied. In this connection a word may be said about adjustments, brought about by planned prices, and by flexible and rigid prices, which may also play an important part in price policies becoming effective. Multiple prices are viewed, as being essential for correct assessment of the situation. In this connection, attention is drawn to controlled and the competitive prices and their place in the mechanism of prices—an important point in pricing policies. This important section is rounded off by concluding observations on an interconnection between prices, incomes and incentives. Price policies have assumed an important place in economic policies and are of special significance to the peasant who is so much under the course of fluctuating, unstable, and unremunerative prices, which it is the objective of these policies to remove or at least alleviate. Even in advanced countries, such policies are framed with special reference to the agricultural sector, when not industries. But it may be pointed out that the scope of the price policies is rather vast and objectives exhaustive.

Objective and Spirit The twofold objective deals with the general level of prices and their structure, with special reference to agricultural sector. Peasants are worried about both, for as debtors they are exposed to the wide movements in prices, and as producers, with prices as costs and the relationships between them. The first and the foremost aim of all economic policies and fiscal weapons (not to speak of price policies in the agricultural sector) is to stabilise the price level at full employment, and this aim is most relevant to the agricultural situation in view of the fact that the farming sector is most afflicted with variations in employment, tending to under employment. This means that the price level should be stabilised at a level at which fuller employment could be attained. This involves theoretical considerations of managed money, and of fiscal policies. The peasants would be content with something more immediate and more gainful, concretely speaking, they want the state and the society to make tangible "contributions" to the agricultural sector. They want parity prices, parity with industry. Generally, the peasant expects the state to manage and peg prices. Price policies are multi-purposed but not divorced from general economic objectives. Hence, from the point of the view of the peasants, they are designed to give them some type of monopoly gain, but this aim is not quite consistent with the one of general economic welfare, for general interest demands that monopoly gains be diluted as much as possible, the state being responsible for general public interest and welfare, this aim could not form an element of price policy. Also, the peasants like to improve the distribution of income, within agriculture and also parity between the agricultural and the non-agricultural sectors. True, that the improvement of the distribution of income is an aim consistent with pricing policies, but a distinction must be made between the personal and the functional income distribution both these are interdependent, but from the social standpoint, the objective relating to personal incomes, is not consistent with an impersonal social policy. If the price policy be used as an instrument for equalising personal incomes, efficiency, waste and confusion would result. Hence price policy should not aim merely at improving personal incomes, about which only individual peasants may be concerned. The third aim is the maintenance of the aggregate demand for goods and services at a level as could be effective in bringing about fuller employment of the resources and increasing productivity. This is rather difficult but should be pursued vigorously in the interests of general economic welfare. Another objective is to bring about a better allocation of resources, not only as between agriculture and industry but also as within the agricultural system itself. This is laudable and worthy of pursuit by the

policy-maker and the planner. Generally speaking, price policies must be forward, and not backward, in their orientation : they should be based on the present and the anticipated trends of the factors of demand and supply and not on historical forces or factors. Price policies are most effective when both incomes and aggregate demands are fairly stable.

Adjusting Farm Enterprises. In this connection should be gained an idea of adjustment in farm production, operation and enterprise, consequential to price policies, and also as a prerequisite to them. The main purposes are to adjust output to current and prospective needs, to conserve the productivity of the soils, prevent further stock-piling or to bring about changes in the cropping and allied enterprises with a view to meeting both the demand and the interests of the consumers, and finally to encourage the better types of farming practices. These aims and objectives are fairly well balanced as also all-inclusive. And they represent the consensus of opinion on this matter. But it has also been pointed out that the temptation is to adjust the farm production to business fluctuations; which, apparently, one of the objectives of price policy, would, on analysis appear to be rather incorrect, for the simple reason that this measure would bring about only temporary gain to the peasant. It may be unwise to restrict production in the agricultural sector, for that would worsen the over-all economic situation; this in view of the fact that the most important characteristic of the agricultural production is its stickiness. Other devices may be employed to compensate the peasants. Similarly, it would be unwise to lower the agricultural production when it fails to move into export markets, for the stage may not be distant when the home needs may be so increased as to absorb all surplus produce, which was being so far exported ; the case of India, in respect of the export of wheat is an instance in point. It is easy to become over-production-minded, but one must guard against this, for overproduction, in the absolute sense, may never exist. In industry, where the supplies are elastic and adjustable, this may be done to restrict production, for some time with the hope that eventually production might expand, but in agriculture, things are not a little different. But when underemployment co-exists with "overproduction" the danger of restricting output must be gauged in terms of increasing underemployment in the agricultural sector. In times of depression, it will be only agriculture that could absorb the surplus labour from the other non-agricultural sectors, and in this sense, too, it may be unwise to clog this avenue for fuller employment. And when "overproduction" results from better technique, it may be in the national interest to maintain that technical efficiency, for a backward step may be inadvisable. But when and only when, the increase in

production comes about as a result of state subsidies, the same be revised in accord with existing conditions. In regard to positive measures, it may be suggested, that prices, especially relative ones, of productive factors, and the produce, must be made the instruments of an adjustment policy, this means that to achieve this end, the price policy must be all-comprehensive. The aims are to conserve the productivity of the soil, the storage of more durable types of produce, the enlargement of family farms, the initiation and introduction of better farm practices, the improvement of land tenures and the assistance to the depressed areas. All these points have to be considered, when evolving a price policy for the adjustment of farm enterprises to prevailing conditions.

Price Patterns and Conflicting Ends Attention may now be diverted to the conflicting ends in price policies. On the one hand, they adjust farm enterprises by bringing about steadiness of incomes, and on the other, it would like to be conducive to general economic welfare. In the first instance, there is the conflicting movement of supply and demand in the agricultural arena, this topic was studied in an earlier section. Recently, the trend has been the slowing down of the rate of the growth of demand for agricultural produce, with the result that unless newer uses for the consumption of agricultural produce are discovered, better technique is likely to result in glut of agricultural products. Regarding it could be said that the elasticity of the incomes is great because of the greater frequency of agricultural instabilities and price fluctuations in agricultural commodities. There are also the inequalities of incomes, as between the peasants themselves, and in the light of this analysis, it is not advisable to concern with personal incomes. Another inconsistency lies in compromising the general ends with the agricultural ones, which may be better served by shrinking farm production, from the standpoint of general welfare, this is inadvisable. What is important from the national economic point of view is that nutritional gaps be closed, and this end must be attained even at a cost, for without proper nutrition, national capacity would seriously decline, with consequential loss of productivity. Another inconsistency arises when the price policy is directed to the stabilisation (not improvement) of agricultural incomes the result is that the shift from the agricultural sector to the industrial one may be slowed down and the existing (increasing) pressure of population on land intensify. This is a major problem in view of the fact that farm people have only declining opportunities, at least in so far as farming goes. And to reconcile industrial unemployment with chronic agricultural underemployment through price policy is a stupendous task, which awaits the planner and the administrator. If farm incomes are raised, most of the increas-

ed earnings may be spent on the purchase of manufactured commodities whose prices may rise, thus bringing about unfavourable price ratio in the rural economy: this alone is sufficient to bring about a decline in the real incomes of the peasants; this is another conflict about price policies. Price stimulus to agriculture is slow, while to industry it yields immediate results; thus the fact that prices could not be multiple, only implies that the reactions on different sectors of the economy would be different. The problem is : how to reconcile these two incongruent states of affairs ? The stabilisation of farm prices has to take account of the march of technology and its speed. The technique of agriculture is shaping itself out in such a manner as to bring about a considerable surplus in the near future, the prices would have to be constantly revised in the light of this fact. This is another headache for the price policy-maker. Low earnings in the agricultural sector have to be raised, and that could only be done by restricting agricultural output, an end, which is inconsistent with the general economic welfare.

Compensations and Guarantees. In the light of the foregoing, one has to be conscious of the complexity of the implications of price policies in agriculture and resolve the problem of suggesting a way out, so as to reconcile the conflicting ends, underlined above. It may be wise to suggest that these ends are not so conflicting as they may appear to be. The one end which must be never lost sight of is that of general national economic welfare, and not of the sectors, like agricultural, commercial or industrial. Viewing the problem from this angle, one could feel one's way through. The conflict between the private and the public ends in agriculture, may be minimised by the effectiveness of a price policy which may take time to percolate to millions of small farm producers, scattered in all the remote corners of the country. Still, out of this apparent conflict, must be detected a complementary state of affairs, for establishing some order out of this apparent confusion. But the fact is that the state could not influence production on small family farms, which, if run on a subsistence basis, may resist state pressures. There is all the merit in measuring and assessing the limitations of the state policy, for it may often happen that the efficacy of a price policy is measured by the improvement, brought about in agricultural resources. The main problem of price policy is to stabilise income; this is not an insoluble end either. Prices, as by themselves, could not ensure income stability. They have to be supplemented by other measures, which the state should take up. The first step is to stabilise the economy, not only is one isolated sector, but the economy as a whole with a greater emphasis on the agricultural sector. But this is too general a plan for the administration to follow.

Price policies, in order to be effective, must be complemented by compensatory payments made to peasants when business depresses and unemployment spreads. It is impossible to bring about a synchronisation of the industrial and the agricultural production trends and fit the same to accord to cyclical trends. For the fact is that farm production does not permit of easy curtailment, even if strongly desired. Hence, the only policy is that of the compensatory payments to peasants, in order that the instability of farm incomes, inherent in fluctuating prices, is reduced and also that agricultural production is not disturbed, with evil consequences on the general economy. And compensatory payments should also strengthen price policies that the state proposes to follow; it is not with a view to reducing only the income hazards of agriculturists but to minimise price hazards, that this policy be adopted. The level of employment and the effectiveness of the price policies would serve as indicators for the initiation of the compensatory payments to be made to peasants, this means that these payments have to be scaled to price level. Compensatory payments may be of adjusting types, adjustment payments are designed to aid the depressed sectors of agriculture so as to make adjustments not only in the prices but also in production, employment and income of the region affected. The second type are transition payments, which may be made for the specific purpose of supporting farm prices by paying the difference between the market and the support price, under commitment by the Government. Third type is the *conservation* payment, made for the purpose of inducing the peasants to follow such practices as are calculated to conserve the soil. And then there are welfare payments, which are only for the purpose of enhancing socio economic welfare. In all these payments, the element of relationship with prices is there, whether directly or indirectly, but the more important type is the *transition* and the *adjustment* payments. The rate is to be determined by price differentials and price policies, the state intends to follow. It is expected that the compensatory payments, in their implementation would be non-disturbing, both in regard to the general pricing process as also for the benefits of labour and business. But it is difficult to adjust these payments to conditions in agriculture, and would also be ineffective to bring about a change in the relative price structure in agricultural arena, they would remain undisturbed. And then it may also be pointed out that they are ineffective for subsistence farms.

Price Administration Price administration determines the efficacy of price policies in the agricultural sector and also their efficiency. Linking this with the foregoing, it may be observed that the administration of compensatory price-plans is also beset

with difficulties ; farm prices may be quite out of line with other prices and it may be difficult to draw the line, where to peg agricultural prices. Transitional price policies may be followed in order to gauge the situation clearly, also tentative administrative measures may be taken with the same end in view. Compensatory payments, for the purpose of enforcing price policies and in order to make the price-supports effective, are liable to be exploited by pressure and political groups, and this may tax resources of public finances. And the administration of price policies in the matter of farm families, who may undertake production mainly for the objective of subsistence, may be another fact to be reckoned with. In the low income groups, the price policies may not be possible of efficient administration, for reasons similar. But looking at the problem, more positively, one understands what constitutes a good price administration. Price administration like all other types of administration must be effective, for an ineffective type is worse than the absence of one. But to this, a rider has to be added, that the objective of all price policies is to renovate price-production relations and also to revitalise the agriculture sphere, as a whole. It may also be stated that another objective, stated so many times, above, is to bring about a readjustment and also to stabilise agricultural incomes. It is for these many purposes, that price policies are administered. In the agricultural sector, monetary adjustments and credit weapons slowly make their effect felt ; hence dependence on monetary instruments for putting prices policies into effect is dangerous and incorrect. The price administrator must remember that, in the agricultural sector, wholesale prices tend to fluctuate more than do the retail prices, a situation that is different from the one in the sphere of industry. The second fact is that prices of the raw materials tend to fluctuate more than those of processed goods and the manufactured articles. This influences the administrator and the peasant. In the third instance, greater is the rigidity of those prices, which constitute agricultural costs, the ones which constitute agricultural incomes. The price administration, in order to reach the peasants, must be conscious of the impact of prices on agriculturists. In this regard, the administrator must pay special attention to the problem of the inter-linking prices in the agricultural sector, for nowhere else are prices so interlinked as here. And this chain of prices is a complicating factor in agricultural production, and also in pricing. Dependence on agricultural statistics, for the farming of the agricultural price policies, may be risky for the fact is that production in agriculture is very erratic. And technical, economic, social and psychological factors enter into the process of price-formation in this sector, and all these factors have to be tackled by the administrator. Price administration must be operative at all stages of production, especially in agriculture.

Planned Prices and Adjustment The problem of planning prices is the next topic. How should adjustment be brought about through prices? And what should be the considerations for planning prices? These are important questions for the planner and the price-administrator. There is a complicated task, but one, if efficiently performed, would be a credit to the planner and also helpful to the peasant. In the very first instance, the goal is to stabilise the price levels, this means that planning should be directed to eliminate price fluctuations, which shake agricultural production and bring about greater fluctuations in agricultural incomes, which it is the object of all planning to stabilise. As a group, peasants are in the debtor category, this means that falling prices make the burden of debt much heavier on them, and many of them may have to become tenants. Stability of the price level is recommended, if only for the purpose of arresting the fall of prices. The second most important objective should be to establish forward prices in the agricultural sector. Farm incomes are considerably influenced by the movements of the farm prices, and the structure of the farm prices considerably affects the usage to which the produce is put. It is the relative prices that influence structural basis, and determine the usage of the produce. The peasants depend on relative prices, which are continually shifting, with the result that inaccurate price expectations are generally the rule, rather than the exception. It is this price uncertainty which it should be the purpose of the administration to remove, being responsible for reducing farm efficiency and productivity. Forward prices would go a long way to remove this uncertainty. These prices should be announced sufficiently in advance so that peasants can adjust their tillage accordingly, they should also cover a sufficiently long period so as enable farmers to reap their full advantage, also forward prices should be precise so that peasants know where they stand. Forward prices should be such as to achieve the desired output, this would go to lessen price uncertainty. Instead of support prices forward prices should be established, support prices may be converted into forward prices. The third plank in planning prices, to bring about the necessary adjustments, is to reduce the gap as between internal and external prices, so as to eliminate any undue advantage, for if export prices are higher than internal ones, it would deplete agricultural resources of the economy, because the dealer-farmers would like to benefit from this disparity. If the export prices are lower than the internal ones, the country would suffer from a glut of agricultural produce, which would be imported in quantities, because it is a good market to sell in. Another objective of a price policy should be to make prices remunerative to the peasant, this involves an analysis of the cost structure in agriculture, which must need be undertaken by the planner. If production is unremunerative.

the very incentive to produce is considerably weakened. And finally, agricultural prices should be regarded as the costs for manufacturing; they should be pegged in view of the costs structure of industry.

Flexible and Multiple Price. No account of price planning would be complete without a reference to flexible and multiple prices. It is contended that agricultural markets are imperfect; prices in the realm of agriculture could not be identically the same everywhere; they would have to vary as between different markets for some of the markets may be local, and local difference tends to persist. In this context, it would be realistic to take account of multiple prices; this means having several prices for identical products, sometimes even in the same market. Multiple prices do rule in the agricultural sphere, and no planner could afford to shut his eyes to facts as they are. It has to be conceded that multiple prices should also be planned for if price disparities are widening, the result would be an imbalance in the sphere of agricultural production. Hence in the interests of achieving a balance in different sectors of the agricultural economy, and as between the different producing centres, it is highly desirable that these things be not left to chance, but are pre-fixed and regulated. The elements of imperfect competition that persist in agriculture are responsible for multiple prices. It is not possible to wipe out multiple prices, but what could easily be done is to eliminate disparities. The price review system in Britain is commended in this respect, for this ensures guarantee prices and tends to remove price disparities. Flexible prices have an element of elasticity about them, and solve the problem of rigidity and serve as an antidote to the evils of rigid prices. The planners should make the rigid price-cost structure into a flexible one, so that the evils (underlined above), arising out of these rigidities be wiped out complete. Some such device should be adopted as may remove the rigidity of prices; prices should respond to cost changes. This is a complicated task, and one which could be performed by agricultural price experts alone. The adoption of the scientific methods of cultivation, may help to some extent only. More could be done, by giving the peasants some price-estimation in advance of the sowing season, so that they could make the necessary changes in farming, accordingly.

Controlled and Competitive Prices. Next, attention may be drawn to the distinction as between the controlled and the competitive prices. Prices, obtained by the agriculturists for their produce, are determined by competition as between them. On the other hand, there is the fact of imperfect competition as between the dealers. Prices may, therefore, be controlled so that peasant's earnings are not so low as they would be when prices are deter-

mined by competition which is remunerative only to middlemen, but not to peasants. Thus prices may be controlled by the state or proper authorities. In this matter, state policies must be complementary, in order to be a success. It may be pertinent to note the limitations from which state policies suffer. These arise out of the amount of complementarity which this policy is able to offer to the private sector. State control programmes may be divided into those, which are born out of emergencies, e.g., depression and war, and those which are incidental to the planning needs of the country. In regard to price controls for emergencies it may be stated that they may not be imposed or carried out with an eye to the future, but only for immediate needs and problems. Production policies, like the use of acreage allotments, may also supplement price policies in order to make the same effective and fully operative. The fact is that no production programme would be carried through if it is not controlled at both ends of price formation, the supply and the demand ends. The controls may be ineffective for the prices to operate in the same manner, as designed, if they are not supplemented by control of supply and demand, this implies a control over procurements and also a rationing system, for these twin measures alone would ease the problem of controls and make them efficient.

Prices, Incomes and Incentives Pertinent it is to trace the interrelations as between incomes, prices, prices and incentives. Prices lie at the root of incentives and operate through incomes. Prices of farm products determine the income of the peasants. Prices do not move in accord with costs, with a rise in prices, profit-margins rise and that in turn, raises incomes. Thus incomes rise, usually, with a rise in prices, and appear to be a direct function of prices. Incomes provide incentive to peasants, the higher the income, the greater the incentive to produce more and more. This would appear to be sound analysis from the theoretical point of view. But it may be pointed out that actual practice is different from theory. In the first instance, the connection between incomes and incentives is not so direct as it appears, for other factors may also intervene, with the result that the "income effect" may be much diluted. The second point is that the usual size of the farm and the holding is the family unit, so that with a fall in prices, the incentive to earn the same quantity of money for family subsistence is the one target before a family farmer. Hence out of necessity, the peasant produces more than he should under depressed prices. Thus incentives may be inversely related to prices and incomes. Again, it may also be pointed out that the peasant's excess income is not ploughed back to his enterprise. This means that higher incomes may not be very advantageous, for the peasant may try to meet his pent up demand, which had

been inevitably postponed in the times of lowering incomes. Thus stabilised prices would provide the peasant with best incentive and not rising prices as may be imagined by the theorists. Assured of a stable income, the peasant is enthused to making permanent improvements and plan to put agriculture on a sound footing. Thus the target of the planner is not rising incomes for peasants.

The Market Mechanism. In the light of the above considerations, it is pertinent to enquire if the market mechanism, weak and defective as it appears to be, is at all capable of adjusting the system of farming, qualitatively and quantitatively speaking, to public needs. How effective is the market mechanism to bring about this adjustment? In this regard, it may be instructive to be aware of the fact that markets have functioned for quite some time, and have been bringing about adjustments in the farming business according to public needs; the survival of this system must have been a potent reason for its effectiveness, even if the efficiency be not very dependable now. Still, the question of the extent to which the market mechanism could be depended upon is pertinent to the analysis in hand; this section examines the issue from various points of view. In the first instance is attempted an analysis of the market. What is the coverage of the market? And what are the safety valves therein? A reference would also be made to market regulation and conditions of monopoly and their bearing on the adjustment mechanism. What are the price support schemes in the markets and their impact? How could protection and stability be assured to these schemes and the incomes of the peasant? And last are dealt price review schemes and the form that planning should take.

Analysis and Application. Pricing process is the heart of the market mechanism. The efficiency of the system is judged by such prices as reflect the basic demands of consumers, both qualitatively and quantitatively. Secondly, it should be capable of moving supplies, present and potential, to consumers. Thirdly, it should also provide a structure which may maintain stocks as between the one season and the other. And lastly, the prices must be natural as between the different parties, as between consumers and producers; this should be effective as also economic. The analysis of the market mechanism is to proceed on these lines; if prices move on the lines underlined above, the adjustment of farming to public needs would be brought about rather automatically. In this connection, public needs may be regarded as the expression of consumers' demand and also the complete off-take of agricultural commodities by the consumers. That would bring about an adjustment of public needs to the farming system, and *vice-versa*. It is the pricing function of the

market which is most important, and through which farming could be adjusted to public needs, conveyed to the peasant through the mechanism of demand. Does the pricing mechanism contribute to the effectiveness of the productive apparatus, or does it not? Another thing to be understood is that effective demand should also be expressed by the market mechanism. To the extent this is possible, the efficiency of the market mechanism is determined. It is pointed out that the control programmes may fail to bring about a correct functioning of the market mechanism.

Coverage and Safety Valves In this connection, it may be instructive to rivet attention on the coverage of the market mechanism and also to appreciate what safety valves operate therein. Without assessing market functions, it may not be possible to understand the problem of adjustment. Between the consumer's needs and the produce, the connecting links are the market and the relative prices. Market prices adjust production to market needs but only if the time lag does not operate. Prices reflect the basic demands of the consumers, as to quantity and quality, and therefore, guide the productive apparatus to the same end. In the second instance, it should also move the existing and the potential supplies into the required channels, in accord with the needs of the consumers. Lower prices expand consumption, while higher prices hold consumers and restrict their demands. And thirdly, the market mechanism should be efficient in carrying stocks of the agricultural produce as between seasons, that equates demand and supply. But it could only be possible if the storage facilities are efficient. Big carry-overs are justified by good price expectations on the part of producers or stockists. In actual practice, it has been found that carry-overs, even in advanced economies, have not exceeded more than 20% of the crops. It is only through the agency of state loans that carry overs could be induced efficiently. In this context, it may be pertinent to point out that the market mechanism should treat all parties alike, it should be neutral as between all parties, the dealers, the consumers, and the producers. Often the market mechanism is so designed, and so does it operate, that only the middle man gains, at the expense of the producers. Market mechanism should also bring to light the quality differences that are of concern to consumers and dealers, the differences should find expression in preferences as in prices. How the actual quality differentials are applied to actual farm prices, is a function of the market mechanism. In fact, a qualitative price market mechanism has yet to be developed in regard to agricultural products. In this connection, it may also be stated that the market coverage should be as economic as it could possibly be.

The three functions of the market costs need to be separated, the *physical*, the *pricing* and the *risk* functions; the dealers charge for these functions. Market costs would be reduced, if the physical and the risk functions are incurred at lower levels, while the costs of pricing should be kept as low as possible. Thus there are some safety valves which may induce the consumer to refuse to buy articles not in accord with his preferences. In the light of this analysis, it may be pertinent to observe that the mechanism is, to some extent, capable of adapting the farming system to public needs. Excessive state intervention may erect artificial levels at which prices may be pitched by producers; safety valves in the agricultural market-mechanism may be clogged, to the detriment of efficient pricing.

Regulation and Monopoly. Still, it may be pointed out that the market mechanism may not work to expectations especially in time of emergency and of abnormal nature. State intervention need not, however, neutralise the market mechanism for it may only be of a regulative nature. It would be pertinent to re-examine regulation from the angle of market mechanism and judge the effectiveness of the price-market mechanism in bringing about the desired change in farming practices. Price mechanism effectively depends on the circumstances of the case; and price inducements may be supplemented by compulsory schemes and the state authority. Monetary incentives also vary in their effectiveness in the agricultural sector. Not only the producers, but also the consumers, are slow to respond to changes in prices, for consumption habits may have become rigid as also that incomes are rather inelastic. This is what makes it obligatory for the state to enter upon an arena of regulation in the realm of agricultural marketing, for dependence upon the free and open markets is not a secure nor a stable policy to be adopted. While an adjustment may be brought about by the market mechanism, by the operation of time lags; maladjustments may persist for years on end. The system of free and unfettered competition does not yield the desired results, with the consequence that the suitable methods of adjustments have to be devised by the policy-makers. Appropriate state action is conducive to the free working of free markets, when the forces of competition are clogged as by monopolies. Controlled markets are brought into existence mainly because the interests of the low-income groups have to be protected against the depredations and the exploitations of monopolists: Monopolies have persisted in the agricultural marketing mechanism, with the result that they have depleted the resources of the peasant to the point of exhaustion, because of the heavy incidence of heavy market dues, on the peasant-producer. It is this

monopoly control of the agricultural system that has tended to stifle the operation of free markets and forces to bringing about an adjustment as between the farming and the public needs. The dilution of monopoly in the field of agriculture arises out of the fact that the peasants, purchases are made from such firms, as have a monopolistic complexion, thus resulting in monopoly prices in respect of these products and the monopoly deals in agricultural produce and the middlemen, and finally in the inability of the peasants themselves to combat the monopolistic influences that have been in operation as against the agricultural producers. Thus there is the inherent inability of the peasants and the agriculturists to neutralise the efforts of the monopolists making it obligatory on the state to regulate market mechanism in the interests of its perfect functioning.

Price Support Schemes A digression about price schemes may be pertinent at this point for this experiment has been conducted in some countries in the agricultural sphere. Protection against the monopolistic dealers was ensured by price support schemes, which found operation in Britain and the United States. A standard price may be fixed, for commodity under question, to which it is sought to give protection, the end of season in respect of that particular crop find the peasant receiving a deficiency payment, on the difference between the average actual price and the standard price, on the basis of quantity (and also quality) of the produce sold in the market or the state agency. Deficiency payments were financed by the state out of specific funds raised for this purpose, say from millers or from consumers or from other sources. Producers are also assured of a definite price, so that the price-chain is not disturbed, and that the interests of the peasants are protected at all stages of production. Otherwise, it may so happen that the real farm incomes be considerably reduced and that very purpose of the price support schemes defeated by collusion between dealers and manufacturers. In certain cases, advisability of financial as well as fiscal aids is also taken into consideration, and in this case, price is fixed in due regard to the needs of the consumer and the country at large. The state may actually pay a subsidy for differential price, or at a flat rate so that the required impetus to the production of that commodity may be provided by price-supports. In certain cases, price-supports may be made applicable only when the minimum percentage and/or the minimum acreage is cultivated by the tillers. Price-supports may also be converted into schemes of price subsidies so that the qualitative and the quantitative standards of the industry may be kept up. In order to enforce price supports, it may be deemed necessary to impose import controls so that the price stability is attainable in the home market.

and price-supports are more effective. In certain cases, price supports may find expression in price guarantees, designed for the purpose of the effectiveness of these schemes. As and how the trend of prices improves, guarantee prices may also be assured with a view to easing the situation, and also making it more normal. The objective is to free the peasants from the worries of marketing and also to ensure for them a good remuneration, so that they could devote themselves to crop production in as efficient a manner as possible. Incidentally, the objective may also be to promote higher nutritional standards for consumers. In this connection, it is well to remember that there are certain conditions which must be taken as prerequisites for price-support policies; the process must be highly efficient, efficiency of the administrators, and that of the statistical data; secondly, the spirit behind this machinery is also to be one of integrity, fairness and pressure-resistant; thirdly, price supports must be operative at all stages of production of the commodity in question; fourthly, the objective is to adjust farming production and system to public needs; and lastly, price supports must provide the producer a certain amount of security and stability of income, though a better and a more tempting objective would appear to be to enable the state to exercise more control.

Protection and Stability. The objectives of price policies, as undertaken by appropriate authorities, could be defined as those of protection and stability to the peasant and of planning for the economy, with a view to revitalising the economy as such. These twin objectives are laudable indeed and deserve to be treated at length. It may be pointed out at the outset that price-fixing is done on the basis of economic data, and also in view of the set objectives. Price data may be defective and, in view of the dynamic conditions of agricultural prices, and other such allied situations, be out-of-date, with the result that it provides no guidance to the policy-maker in fixing price-supports. Protection and stability are provided by the effectiveness of price-fixing machinery to curb inflation and the conditions giving rise to. In the spiral of rising prices, the incomes of the peasants, in view of the price ratios, shrink and the objective of security and stability to the primary producer defeated. Security may be offered to the peasant and the stability of incomes assured by guidance, and the effectiveness of information, percolating to him; the peasant, in this panic, might fall a prey to the machinations of the local dealers, who may thus fleece him of the produce at a lower price, the price supports, thus having been rendered ineffective. The price support schemes could provide stability of income but if peasants have full faith in their effectiveness. If they do not get the rate fixed by price-supports, they stand to

lose, and their incomes become unstable. Dependence on the operation of free markets has only to be gradually brought about and so also the switch-over from price-supports and price fixations. In this case, the problem of resource allocation has to be looked into the allocation of resources, as between different agricultural uses affects the cost structure, and without cost stability price supports, in their aim of achieving income stability, may be meaning less. Thus, from the purely stability point of view, the state policy has to be directed not merely to the rescue of the peasant from the market mechanism, and its inexorable working, but also in respect of the resource prices, and the costs of the farming processes. For the protection of agriculture, fiscal measures could also be adopted to provide effective security to the producer. Protective measures, as for general agricultural production, may be in the form of quantitative controls of imports by means of compulsory quota regulations, which may be revised annually on the basis of the trends of agricultural production in the economy. Quantitative controls may also be linked with the marketing organisations, so that quantitative and qualitative stability may be secured by agricultural and farm economy in that country. But even protectionist measures have their limitations, the straight tariff may be ineffective in reducing supplies, and the expected price structure may not respond to it in the desired manner.

Planning and Price Review Attention may now be drawn to price planning and agricultural planning, in so far as both co-ordinate and co-exist. In fact price planning may be a powerful instrument of agricultural planning. How could the two be co-ordinated and fitted into one another? All schemes to stabilise prices, and to plan agriculture have some points in common, and obviously it is through the development of these schemes and the exploitation of these common points that the common objectives could be achieved as between agricultural and price planning. Some measure of autonomy needs to be given to producers, so that they could adjust price supports, price subsidies, and price fixation policies, to accord to the needs of the agricultural system as also to their own needs, financial, fiscal, and purely physical. But then the danger is that monopoly power may be abused by producers, hence, price policies have to be composite, so that the interests of the national economy be safeguarded. Price-fixing bodies should be effective in their outlook of national interests of development and planning. In these schemes, the burden of the subsidy is not out of proportion to the benefits to the consumer, this is in accord with the principles of economic justice. It is possible that the price-incentives may be insufficient and inefficient in bringing about the desired results, then it would also be requisite that the

state issues directions to producers to do the correct thing, required in the interests of agricultural planning. Excessive incentives should also be avoided in the interests of prospective production habits of producers, so that they may continue to produce without incentives. It is difficult to ascertain the level at which prices should be pegged, irrespective of the costs of production and also of the inter-relations as between prices themselves. This is what makes the policy of reviewing prices inevitable and compulsory, if price-supports have to accord with planning to be undertaken in agriculture. Price reviews, alone, would enable the state to maintain some association as between changes in price-fixations and those in production costs; this is essential to the stability of the profit-margin to agriculturists, and that of income. And then the price reviews are necessitated by the fluctuating demands on the part of the consumers, and also fluctuations which become apparent in the supply of the consumer's goods from the peasants. The attempt to find a correct substitute for competitive prices, often results in the adoption of price review systems, so that prices may not be fixed at artificial levels, which it may be impossible to operate and make effective. It is the plan, which partakes of the nature of forward pricing (fixing prices on the basis of the prospective date, crop forecasts and yield estimates). The purpose is to eliminate price fluctuations during seasonal production, and the production period, so as to enable peasants to plan in accord with national planning targets and also with a view to notifying price trends, which are expected to be operative in the next producing session. Not that price reviews apply to the prices of the farm commodities alone, but they refer to the pricing of the factors of the production; it is assumed that actual prices are minimum prices.

The Price Level. This section is to deal with the inter-relation of general prices with agriculture. Agriculture is influenced by the price level. This influence is important, because prices are the means whereby the external economic forces get focussed on an industry. It may be instructive to distinguish between two types of price movements; the first relates to all commodities, and the second to individual commodities. There are the movements of the general price level, and those of isolated prices; and it is quite possible that the latter types may be in opposition to the former movements. The prices of single commodities may be rising or falling, without reference to the general price level. The impact of the movements of individual prices was studied; in this section it is proposed to deal with the latter, *i.e.*, the movements in the general price level in their impact on agriculture.

Index of Price Change. In this connection, reference must be made to index numbers of prices. The index numbers measure

changes in the prices of agricultural produce from the farm, of the feeds and the fertilisers. Index numbers are expressed both in averages and in percentages, they show the average price level of group of commodities at one period as a percentage of the average price level at another period. This latter period may be known as the *base period*. This device, in other words, makes comparable the price data with useful indications and conclusions for the peasant and the policy maker. The purpose of index numbers is to bring all prices to a common denominator, and to show the same in a form which is capable of being readily grasped and which could also show the comparative price movements. In the formulation of these index numbers, the first step is to select commodities which may be representative of those that are being sold in the market, the usual procedure is to select as wide a range of commodities as possible and to make it as comprehensive as possible, so that the general price movement may be all representative in its character. The second step is to ascertain, from the market reports, the average wholesale prices for each of these commodities selected for index numbers, wholesale prices are preferred to retail ones, being easy to ascertain. There is a multiplicity of retail prices, which vary from one place to another due to the differential marketing charges, and the price index need not show the middleman's profits. The second step is to select a "base" year, which may be significant from the economic point of view, the end of an economic era, or the beginning of another. The third step is to collect the prices of commodities in base year, again the wholesale prices in average are to be preferred to the retail ones. The next step is to convert prices in the base year in centuries while the last step is to express the corresponding prices as the multiples of the base year's 100 the prices are calculated for other years for each of the commodities in terms 100 in the base year. This is the method of averaging, and the one in common usage. A refinement of the system is to give due and relative importance to each of the group commodities within the group by the system of 'weighting', the greater the importance of any single commodity in relation to the others, the greater is the weight attached to it. More weight is thus given to cereals and staples whose consumption is higher than that of the other. Fixing weights is thus the most important step in the construction index numbers. The next step is to multiply each individual index by the weight assigned to it. The sum total of all indexes is then multiplied by total weights to arrive at the composite index. This *weighted index* is thus more representative of composite consumption than the unweighted one. Here may also be stated the main problems in the calculation of index numbers. In the *first* place, is the choice of the base year, the general principle is that the base year should be the economically significant (the end or the beginning of an era) or be as normal as possible, for that may also

provide a good gauge of price-fluctuations. The *second* problem is that of the choice of commodities to be used for the construction of index numbers; the principle is that commodities chosen should be as representative as possible, and in order to include the qualitative differences, it is preferred that the several brands of the commodities be selected, as many as possible. The *next* important problem is that of weighting; the principle here is that consumption of different articles be found out and weights suggested accordingly, and weighting should take account of gradual variations as may occur in respect of various commodities. The last problem relates to price quotations which may be used in this connection, this was discussed at length. In the light of these considerations, are the index numbers of prices constructed.

Agriculture and the General Price Level. What are the causes of changes in the general price level, and how do these changes operate in the agricultural sector. In this connection, may be invoked the Quantity Theory of Money, which is admittedly operative in the agricultural sector, if not in the general economy. Briefly put, *the greater the supply of money, the higher would the price level soar.* Money is needed to buy and sell goods and services, and the demand for money arises out of the amount of buying and selling that is to be done; it depends on the quantity of goods and services to be transacted in and the number of times they are to be bought and sold. A greater abundance of money or a greater scarcity of goods services would raise the prices of the goods and services in question, while greater scarcity of money or a greater abundance of goods and services would lead to a fall in prices. Usually, changes in the volume and the velocity of goods and services, and similar changes in volume and velocity of money, are unequal, with the result that price level changes are caused, and trend of prices determined. This explanation for changes in the general level of prices is known as the Quantity Theory of Money. The underlying assumptions are that the whole of money available at a certain time, is spent away; and that these various influences are also not variable. These facts are correct in so far as agriculture is concerned, which is comparatively a static industry, and also one in which peasants spend away all the cash they have. But all the fluctuations are not explicable in terms of the Quantity Theory of Money, and several other theories of money have been advanced. Still, of all the theories it is the Quantity Theory of Money that is the most applicable to agricultural conditions. Also, fluctuations in the price levels, of a cyclical nature. It may suffice to point out here that fluctuations in the agricultural sector have an influence on the consumer as well as the producer, the debtor as well as the creditor.

The Impact on Agriculture. As pointed above, changes in

the price level have an impact on the agricultural sector. Prices usually move together, both the agricultural and the general prices are closely inter-related. Also the causes, operative in respect of general prices, prevail in the case of agriculture. In the light of this single fact, agricultural price movements may be taken as fairly representative of general price movements. And these movements have a profound influence on the farmers' fortunes. Changes in prices have important effects on all classes of the community, and this is more effective as far as the fixed income group is concerned, and the peasants too. The former group would benefit from falling prices, and lose from a rise in prices, for in the case of their fall, their incomes buy less. But agriculturists belong to an entirely different category, their incomes rise with a rise in the prices and fall with a fall in the prices. But from this is not to be inferred that price changes and income changes synchronise, there is the time lag, and the rise in prices takes some time to be expressive in terms of incomes. Another factor is that the prices of all commodities do not move up or down at the same time. And there is also a difference in the amount of a rise or the amount of a fall of prices of individual commodities. And the prices of raw materials fluctuate more than the prices of manufactured goods, this is the usual trend of prices. And then prices, which determine the peasant's costs tend to be more rigid than prices, which determine his returns. This disparity as between the prices and the costs, and their movements is significant from the peasants' view point. This could be accounted for by the fixity of contract payments and the non-paid character of family labour, which is the most important part of farm labour. The wages bills of hired labour may also be a fixed charge in view of the fact that this is sanctioned by custom or contract. In respect of marketing charges, the subsistence of the peasant and the raw materials that the peasant is to offer in the market, there is a considerable amount of fixity, consequently farms costs tend to move more slowly than do farm prices. The disadvantage of this lag tends to outweigh any advantage that the peasant may stand to have out of rising prices. Further, the turnover of this industry is also slow due to the operation of the technical, biological, social and economic reasons.

Summary To sum up, this chapter points to the possibilities of adjustments by the pricing process. The reader was initiated into the discussion with the preliminaries about the definitions of "valuation", the elements of the theory of value, with the considerations of demand and supply, in the agricultural setting, and the practical and the theoretical aspects of price-fixing. The interrelations of demand, supply and price were

brought out in the first paragraph of the next section, where attention was devoted to the theoretical aspects of price fixing. How prices influence costs and costs influence prices, was the subject of the next section, which dealt with the problem from the special agricultural angle; special reference was made to the elasticities of prices and costs. Next, was taken into consideration the system of pricing within the orbit of the market; the various types of competition, pure, perfect, monopolistic and imperfect, were also viewed in the perspective of the pricing process. Pricing problems were discussed in the light of the operations in the free, open, controlled and regulated markets. In this connection, special attention was drawn to the instruments of State controls. Price policies were examined in the next section, which dealt with its objectives, the adjustment sought to be brought out of conflicting ends, of price-supports, guarantees and compensations, and of price administration. Attention was also directed to the adjustments possible through planned prices, flexible prices, multiple prices, controlled and competitive prices. And finally, the section was rounded off with a few observations on interrelations as between prices, incomes and incentives in the agricultural sector. How far does the market mechanism bring about adjustments in the system of farming, in so far as the public needs are concerned, was the subject of the next section. Giving the range of the market mechanism, and pointing to its safety valves, the argument underlined the necessity of regulation of the "free" markets, and explained, at length, the price support and the price-review schemes, for the realisation of planning ends in agriculture. The last section was devoted to the formation of index numbers and their significance for agriculturists and system of farming.

Conclusions. It may be not out of place to direct attention to the outstanding conclusions that may be inferred from the above study. In the *first* place, the theory of value was found applicable to the system of agriculture but only by modifying it, and its modifications were stressed in the study above. In the *second* instance, were made distinctions as between price-fixing of agricultural and general commodities, and not the long period, normal or secular ones. *Third*, price-cost changes in agricultural produce are not a little different from similar relations in non-agricultural commodities, the agricultural sector, being characterised with some amount of rigidity; the changes in the two are also not of a similar character and magnitude. *Next*, the analysis discovered that the free and competitive markets are not the rule in agriculture, they are rather the exception. *Fifth*, the price policies, when chalked out by proper authorities, must be cognisant of conflicting several factors, relating to the reconciliation of ends, in their impact on adjustment sought to be brought about in

the farming and the non farming sectors. It was also pointed out that the system of guarantees, compensations, and price support could only function, if the problem was attacked from all ends and tackled as a whole and not in parts. *Sixth*, much depended on the system of price administration, its integrity and vision, for the little mistakes may be tantamount to nullifying the very objectives which it had in view. *Seventh*, the utilities of the flexible, multiple controlled and competitive prices were explained, and it was also pointed out how the different systems may be combined and to what extent, and for what purpose. *Eighth*, the importance of stabilising farm incomes in providing the needed incentives for agricultural promotion and progress were stressed. *Ninth*, the market mechanism, left to itself, could not be effective in bringing about the required adjustment in farming systems to public needs, hence, the importance of price-supports and price-reviews for planning in agriculture. *Lastly*, conclusion was that the impact of agricultural price-variations on different sections of agriculture was different, and also that rising prices did raise incomes, but not simultaneously, these were the important time lags, for which pertinent reasons were underlined.

The Critique Agricultural price policies have to be carefully chalked out, for they not only affect agricultural incomes, but also non agricultural ones. The main objective, in planning, is to canalise farmer's energies into producing the requisite commodities, both qualitatively and quantitatively. Another objective is to smooth out various fluctuations for not only are they injurious to the agriculturists, but also demoralise them. In this regard, attention is usually not paid to resource prices, this should also be done. A major inefficiency of price policies grows out of price expectations being pitched high. Hence, the correct implementation of a price policy involves a certain amount of the education of producers. Another point that is lost sight of is the direction, to be given to securing the optimum unit of agricultural production, and to even out production instabilities. Price policies are usually sluggish *vis-à-vis* major changes in price-relationships, any correct formulation of these policies should take into consideration the impact of the price relationship in agriculture and through it on the general economy. Hence a comprehensive price policy would be based, on the system of forward prices, which taken into account guarantees compensations, and supports and the problem of correct exploitation of physical and human resources for the optimum good of the general economy. But the expectation that the price policies could secure maximum efficiency of the agricultural system need not be nursed in view of the fact that even if the price policies were flawless, there would still be a certain margin of error (at least in certain sectors) and there may be the working of certain pressure groups, too.

CHAPTER XXVI

UNSTABLE AGRICULTURE

Economic fluctuations—Nature and characteristics. Theoretical Aspects: Modern Version, Application to Farming. Agricultural Fluctuations—Unstable Exchange Terms. Parity and Disparity. Impact and Inference. Income Effect. Types of Fluctuations—Short period Disturbances. Price Fluctuations. Seasonal Annual and Cyclical Fluctuations. Income Instabilities. Output Variations. Seasonal Variations—Demand and Supply. Crops and Livestock. Prices and adjustments. Annual Fluctuations Variations in Yield. Prices. Stocks and Supplies. Mercantile Risks. Cyclical Disturbances—Weather Influences. Prospective Profitability. Output and Income. The General Agricultural Cycle. The Initiating Impulse. The Average Length. Reference to Special Commodities. Prices and Profits. The Income Aspect. The Impact of Population. Real Incomes. Effect of Improving Technique. Immobility of Productive Factors. Regional Differences. Cost-Price Variations. The Inference. Countering the Cycle; The "Cost" of the Fluctuations, Immediate Steps. Long-term Remedies. Cooperation and Planning in Agriculture. Summary and Conclusions—Agricultural Fluctuations.

Economic fluctuations are a very well noticed phenomenon, but business fluctuations are not of the same type in all spheres of economic activity. In the agricultural sector, especially, they assume a definitely distinctive character. The subject requires some amount of forethought on the part of the planner and the peasant alike. The problem is examined from the angle of income and output, the latter being studied in the first instance, for the farmer's income depends on the output and the price it obtains in the competitive markets. The first section is to deal with the nature and characteristics of economic fluctuations in general, followed by a dissertation on agricultural disturbances, with special references to parity and disparity as between agriculture and industry. Attention would be drawn to various types of fluctuations, seasonal, annual and cyclical in the agricultural sector. Next section analyses these fluctuations; the seasonal being followed by the annual and cyclical ones. Separate sections are devoted to a description of all these types of fluctuations in agriculture. Detailed analysis is made of the agricultural cycle, its length, influences and initiating impulse. The next section looks into the problem of agricultural incomes and their instabilities. The section on "Countering the Cycle" makes positive suggestions as to measures, long-term and immediate, for the purposes of neutralising the cycle in all phases.

Economic Fluctuations. Much has been said about the nature of the economic and business fluctuations, which have been dealt

with at length by various economists especially after the thirties, when consciousness about them was roused. This cycle was of an exceptional nature, with the result that the length of the cycle and its nature had to be examined afresh in the light of the behaviour of this particular cycle that lasted for about seven years, and gripped agriculture very severely. Since then attention has been devoted in particular to agricultural cycles, which have been distinguished from other cycles and fluctuations. Statistics about changes in general business activity are available with the various business concerns though not in agriculture. The study of the business cycles is important from the point of view of the economy in general and of incomes in particular.

Nature, Phases & Characteristics Business fluctuations denote a type of instability which has a wave like movement, of the rise and the fall of business expectations and earnings. The wave like movements in the incomes of the business, the economist terms "business cycles" or economic fluctuations. Economic fluctuations have certain phases, usually four, expansion, recession, contraction and revival, or alternatively, prosperity, recession, depression and recovery. To these four phases may be added another one panic, which may punctuate one phase with the other. The first phase comes when there is a buoyant feeling in business circles, and the investment index is high. Businessmen expand their activities and boom is on, with the result that employment and economic activity is on the incline. Business expectations are high with the result that the investments also expand. Prices are profitable, to businessmen, and general prosperity prevails among people, who share it. The volume of the bank credit is on the high and the wage rates rise in response to greater demand for labour. But the experience is that the greatest expansion is in the "heavy industries", for the demand for capital goods is the intensest and rise of prices is registered in the consumer goods industries, where the consumers having earned high wages, spend their surplus. This is not to discount the expansion of activity in other sectors, but the point is that comparatively speaking the expansion is the most marked in capital goods industries and the rise in the consumer goods prices also the highest. Recession is the turning point of the cycle in which such forces are released as make for final contraction of business activity. In this phase, there is the unloading which such forces are released as make for final contraction of business activity. In this phase, there is the unloading which tends to create a comparative glut of goods, with the result that the prices decline to the former level. Prices tend to depress while costs catch with prices, with the result that the range of profits also narrows. Investment therefore shrinks with a consequential decline in employment. It is possible that produc

tion may fall for a while, hesitatingly, but by spurts later on. This decline is on the basis of variable costs and not on the total cost basis; only those industries would be contracted which have a high proportion of variable costs. But in industries where fixed costs predominate, the contraction is not advised at this stage. This recession depends on the nature of the panic, caused by the economic facts of investment, income and employment. The next phase, the one of contraction or depression is the most painful. It is characterised by a rapid decline in output and income, consequent upon the fall in employment and investment. In this phase, capital goods suffer most while consumer goods industries do not decline as heavily as capital goods industries. There is a fall in average prices which is due to a decline in demand, present and potential, and shrinkage in the volume of the purchasing power with consumers. Bank credit is reduced very considerably. This reduction impinges on investment and commerce. Cost-price relationships, are not of line and very disparate. In the next phase, that of revival or recovery, there is the regaining of confidence on the part of businessmen, who start reinvestment in their firms, so far starved of funds, now once again available from banks. The leveling out of the previously falling prices is also brought about in this phase. The motives for price-cutting no longer prevail; prices are restored to the predepression level approximately. Consumers' goods need replacement for the consumer had withheld their demand in the previous periods. Some costs also begin to fall, and the cost-price divergence is raised, with the heightening of profits. Panic is gone and the revival of the business activity is now under way. Two characteristics stand most pronounced; the *periodicity* of the trade cycle and its *synchronism*. By the first is meant that business cycles have a periodic recurrence, and this period has been taken to be a multiple of $3\frac{1}{2}$ years, though opinions differ. One thing is certain: with the operation of "free" economies, the frequency of the cycle is much greater than otherwise. The second characteristic is important, business cycles synchronise in the economy; they have a tendency to spread like wild fire. In this matter, too; agriculture stands out in a distinct category, for the cyclical movements in the agricultural sector either precede or follow movements in the other sectors. The incidental characteristics are; a variation in the amount of bank credit and the volume of money, (due to the changes in total employment and output), the prices of the manufactured goods are rather rigid, while those of the farm products are quite flexible and responsive to the cyclical changes; the incomes from profits fluctuate more than other incomes and finally there are wider fluctuations in capital goods industries than in other industries. These features.

have a distinct course in farming. But still, it may be remembered that the business cycles dominate the general trend in the sphere of all business activities, including that of agriculture and farming.

Theoretical Aspect The theoretical aspects of trade and business fluctuation may be grouped under seven headings: the climatic explanation, the psychological approach, the monetary causes, the competition and under consumption theories, explanation in terms of adjustments, savings and investment approach and the modern explanations. The oldest explanation is that couched in terms of the climatic theory, according to which business fluctuations result from cycles of climate. Jevons believed that it was the sunspots which caused fluctuations, while others have extended the theory to cover all climatic variations which follow a cyclical trend. Periods of good harvests alternate with those of bad harvests, with the result that the cycle starts in agriculture, and this industry being the foundation of all the other industries, it extends to all other industries which are also adversely affected. Failure of crops in Egypt may result in the textile mills elsewhere being adversely affected, and this is responsible for higher prices in the allied industries. The epidemic may spread to other industries, with bad effects. Thus failure of rains may be causative in bringing about a depressed state of affairs. True, that the climatic variations do affect the economy, but it has yet to be proved that they affect so severely as implied here. The psychological explanation is couched in terms of the approach the businesses make to their investment proportions; in a buoyant mood they would like to extend the sphere of their activities and boom conditions may result, while a depressed state of mind may bring about a depression in the industrial sphere. Confidence may mean expansion and boom conditions, while dejection may mean depression. Rooted in human psychology, the explanation does not appear to be a potent cause of the collective economic phenomena. Monetary theories stress the role of money in economic affairs, and ascribe to it the conditions of boom and depression, in case of the overissue of money and facile credit, business may expand, while in opposite conditions, business is likely to be starved of the investments with the result that depression may sway the business world. It is the superstructure of credit that is so built up on the foundations of the expanded money supply that is causative of the boom, and its contraction results in the credit facilities being withdrawn and business suffering on account of lack of accommodation from banks and investing houses. Monetary and financial institutions do play an important role in business but

it is to be doubted if world-wide phenomenon could be explained in terms of isolated monetary policies. The competitionists explain economic fluctuations, in terms of the wastes of competitions, which lead to overproduction, raising costs, due to the law of Diminishing Returns. Keen competition does prevail with the result that prices crash : also the cumulative effect is to raise costs, with the consequence that the profit margin falls, leading to disaster for weaker firms and disinvestment in the larger houses. This explanation has an element of truth, but fails to account for the regularity of the crises. This theory may be supplemented by the underconsumptionists' explanation, according to which the responsibility for the depression is assigned to disparities in the income distribution ; these disparities deepen, consumption declines and the depression intensifies, for people are unable to consume goods and businessmen to earn their profit margin. This explanation has a degree of plausibility but we have to point out that the argument is fallacious, in that the movement of the capital and the purchasing power have not been traced in the correct manner, for it is not essential that savings may be hoarded and that the purchasing power may not reach the consumer, if it is saved. Next explanation is offered by Lord Keynes, who points out that the cycles arise out of disparities between savings and investments. The total costs are the aggregate income of all the members of the society, and a portion of the same is spent and the rest saved. Now if the savings are invested, the demand for the goods would continue and the economic machinery remain in working condition, but if the savings fall short of investments, the whole mechanism would suffer on account of the purchasing power becoming inert and immobilised, with a low off-take of goods produced; the depression is the result. On the other hand, if the savings are less than investment, over-investment releases a large amount of purchasing power and boom conditions result. The disequilibrium between the savings and the investments is what leads to booms and depressions. Keynes depended on the mechanism of the rate of the interest for variations in savings and investments, but it is known that the rate of interest is not half so potent as imagined. In this connection, mention must also be made of the two multipliers, the investment and the employment multiplier. The investment multiplier gives us an idea of the increase in the total investment consequent on initial investment, while the employment multiplier relates to an increase in employment, on a similar basis. Others work on the acceleration principle, which refers to constant and continuous growth of business. Hicks, who used this instrument for the explanation of the cyclical fluctuations, thought that the ratio of the output/capital is governed by the technique and may

be unable to change in the short period but may change continuously in the course of the trade cycle with the result that the unadaptability of the ratio results in the precipitation of the cycle. Fluctuations take place within two limits, the upper one being that of investment, the acceleration getting its motion in the upward or the downward swing. But the acceleration principle is regarded as a crude tool, unsuitable to explain all fluctuations.

Modern Version There is great difference of opinion, regarding the causes of trade and business cycles. It is thought that the over-issue of credit, due to an abnormally low rate of interest is solely responsible for the cycles. Dr Hayek, who advanced this explanation, thinks that the equilibrium between savings and investment is upset by wrong banking policies, the creation of credit necessitates the diversion of investments and resources from some forms of production to others. Disinvestment starts along with increased investment, with obvious results. But it may be pointed out that the theory does not explain the cyclical nature of fluctuations, it only appears to stress the dangers of an over-issue of credit. The most modern explanation is given by Professor Tinbergen, who suggests that the cause of the business and economic fluctuations is to be found in the 'cobweb' character of the demand and supply. In the version, given by Nicholas Kaldor, "cobwebs" are formed by adjustments and readjustments in supply and demand curves, due to the behaviour of production, price and again production. The cobwebs may be of continuous, divergent and the convergent types, with the result that the states of equilibrium and disequilibrium, result in booms and depression. "Cobwebs" arise out of disparate elasticities of demand and supply. Plausible as the explanation appears to be, it suffers from some drawbacks, it is applicable to a limited extent where production is rather invariable and prices depend on supplies. But it may be pointed out that this may not be the case changes in income pattern and in fashions may also affect prices. The cobweb theorem does not afford an explanation of all these facts and factors, it is only a partial explanation and though not totally discarded it is not fully accepted. The causes of a trade cycle may be summed up as relating to maladjustments in demand and supply variations in the prices the causative forces affecting demand and supply, the psychological forces and the climatic reasons. All these causes operate though the theories, advanced above, stress one cause or another. It is the resultant of all the above mentioned factors responsible for the course of the trade and economic fluctuations, and not one alone. It may not be a fruitful search to locate the cause in one theory only.

Application to Farming. The above theories refer to explanations which may be true for the economy in general, and not with particular reference to the conditions obtaining in the realm of agriculture. It is a matter of observation that the depression starts earlier in agriculture, and persists longer there, with the consequence that it is severer in its intensity in the farming sector, than anywhere else. May be, this is due to the inelasticities characterising agricultural production, or may be, it arises out of some other causes, making it difficult for the farmer to make his preparations for combating it, or may be, it originates from ignorance of the peasant. But the fact remains, that the cycle is of a longer duration in the agricultural sector. It may also be pointed out that the climatic theory long discarded by the economists, is apparently more plausible as an explanation of agricultural cycles, than the other theories that may be advanced, to explain this phenomenon. Agricultural production is at the mercy of weather and that is why it is a function of the climatic changes, with the obvious result that the variations in the weather would certainly affect the same in a more heightened manner. In the light of this, it may be maintained that cyclical instabilities are due to the cycles of climate. But whether the cycles of climate coincide with the cycles of fluctuations, is still an open question. The climatic and the weather cycles may be coincidental with agricultural cycles, and that may be a plausible explanation. Out of the other explanations, it appears that maladjustments in supply and demand also cause agricultural fluctuations, for the supply of agricultural commodities may be inelastic, while demand may undergo a change; or while the demand may be stable, bumper crops may have to be disposed of at rock-bottom prices. Thus maladjustments in the supply and demand may be causative of agricultural cycles. Overproduction, in the sense above, may not serve to explain the cyclical nature of agricultural fluctuation, for a larger part of the world, the technique has not been widened to the extent that the agriculture may suffer from such over-production as may be a potent cause of agricultural depressions though it is sometimes said that it was overproduction which caused the Great Depression in the thirties. It may be stated that under-consumption must be combined with the above "overproduction" explanation to account for unstable agriculture for during the Great Depression, while agricultural production was raised by the operation of technical factors as applied to agriculture, the demand for the agricultural commodities declined considerably: thus it was the twin cause operative in this respect and causative of depression conditions. In respect of the Keynesian explanation it may be said that this is applicable only to the economy in general and not to the agricultural

sector in particular, for the nature of agricultural investments is not the same as that of the industrial ones. The monetary explanation does not appear to be convincing in so far as conditions of agriculture go, but is only applicable via the general economic forces, which operate elsewhere. The complexion of the agricultural economy is shaped by the rest of the economic forces, and in this connection, the monetary explanation may be said to apply to the realm of agriculture. The multiplier effect may be operative in the agricultural sphere in a general manner and not in the precise fashion in which the fathers of the concept thought it would. The reason is not far to seek: agricultural production is incapable of the expansion and contraction as are other sectors of the economy. The accelerator principle may be applicable in the same sense, for agricultural cycle may be due to the inability of the farmer to adjust his production to varying economic demand upon his produce. Dr Hayek's theoretical exposition does not apply for the simple reason that in the first instance the credit structure is not so elastic in agriculture and secondly, the credit expansion may not result in increased expansion of agricultural activity. In the same way, the "cobweb" theory may also be said to be inapplicable to the agricultural phenomena, except in very general manner, that the elasticities of demand and supply are not in accord with each other, in the agriculture sector. This theoretical framework does not fit in agriculture.

The Inference From the above, it may be safe to conclude that it would be too much to expect that the modern economic theoretical framework applies to agriculture in the same manner as to the rest of the economy. Various theoretical views may be modified in relation to their application to agriculture. And it may, also be noticed that the above theories could not apply to agricultural sector, except with startling modifications. This only means that conditions in the farming world are not a little different from those obtaining in other sectors, with the result that it deserves quite a special treatment given below in respect of the fluctuation in the agricultural sector. It may be observed in passing that the causes operative in the sphere of agriculture, are such as to demand our special attention, for the course of the agricultural cycle is also different.

Agricultural Fluctuations Special attention needs to be devoted to agricultural fluctuations, and their main features. Their character is different from other business fluctuations. Agricultural production is not a little different from other sectors of the economy, while the productive efforts in the non agricultural sectors may be controlled, agricultural productions may

not be so much under the control of the operator. In this sense, productive stability in the realm of agriculture may not be attainable at all times, for in the case of bumper crops and the disposal of perishable goods, the peasant may have to bring about a reduction in prices, with the result that the loss in terms of the inability of the price to cover even the cost of production may be heavy. Thus the fluctuations in agricultural production may be due to causes, not a little different from those operative in the sphere of industry and commerce. In this section, the problem is exposed from various angles; unstable exchange terms as between agriculture and industry, the parity and the disparity as between the two, the income effect and the impact of these forces on agricultural production and incomes.

Unstable Exchange Terms. Attention is invited to exchange terms, as between agriculture and industry, and agricultural and manufactured goods. It is these terms that matter most to the peasant, for if they turn against him, the loss is his, while if they are to his benefit, his gain is in the form of a greater assortment of goods and services from the non-agricultural sectors, in exchange for the goods he is able to offer. In this context, the terms of exchange affect the peasant's real income. The peasant has to exchange his goods for those produced in the non-agricultural sector, and this exchange is governed by the relative prices of the two types of goods. In case, the prices of agricultural goods are lower than the prices of the industrial ones, or the prices of farm products fall heavier than do the prices of the industrial goods, the terms of exchange for the farmer would be to his disadvantage, for he would have to offer a larger quantity of his own farm produce in exchange for industrial products that he may need. The farmer's real income declines in terms of goods and services. On the other hand, the terms of exchange as between the agricultural and the industrial sectors would favour the agriculturists, when a rise in industrial prices has been lower than in agricultural prices. Consequently, the peasant has to offer a lesser quantity of his own farm products in exchange for a greater assortment of industrial and manufactured goods. In case, the terms of exchange go against the peasant he suffers in real income, and faces a crisis, and in the event, when the terms of exchange are in his favour, he is in a buoyant mood and his real income expands. Thus the terms of exchange afford a key to the real income of the peasant, and his comparative prosperity and well-being.

Parity and Disparity. It has been stated in an earlier chapter, that there is disparity as between industry and agriculture, in respect of income and consumption-production levels.

The disparities of income persist because of the fact that rural incomes are liable to greater fluctuations and the price cost structure in this sector is also of inelastic nature. Prices in agriculture may move downwards or upwards, but costs may not follow prices, and the price cost divergence may be responsible for the disparity of incomes between the two sections. It may also be pointed out that the industrial cost price structure does not behave in the same manner industrial costs respond to industrial prices. Therefore these prices are derived from industrial costs but the agricultural prices are not so derived. True that prices in all the sectors are determined by conditions of demand and supply of the particular product in question but still the sale price would not ordinarily be lower than the variable costs with the result that costs provide lowermost limit to price fixation. But in the case of perishable agricultural produce prices may have not reference to costs they may even fall below costs. This is explained by the fact that the preservation and storage of agricultural commodities is rather expensive. Hence fundamentally, too the disparity remains in earnings as between agriculture and industry. From another point of view the disparity does persist in respect of wages of labour for the fact is that wages are not determined by the same method as they are in industry. In this respect disparities persist in point of all earnings, both wages and profits. Thus too behaviour and nature of agricultural cycles would be at variance with those in industry.

The Income Effect The behaviour of agricultural incomes is not a little different from that of non agricultural ones. Income is of a twofold character in the agricultural context it is indistinguishably composed of both the elements of wages and profits. But not so in the industrial sector. Both agriculture and industry are interdependent in this matter, for rural income is often derived from sales to industry for the consumption of raw material by the industrialists and their factories. Prosperity is a measure of real income of productive factors, or the quantity of goods and services purchasable by income accruing to certain factors. Possibly some changes may benefit industries and agriculture and other occupations the differences in incomes may not be expected to last. It is doubtful if productive factors are mobile, they are not so mobile, and in so far as they are not, the disparity in income in the industrial and the agricultural sectors does persist and this difference as between industrial and the agricultural earnings does linger, in fact, industrial earnings are usually ahead of agricultural ones, which mostly lag behind. This fact is recognised. Farmers' real income is a function of technical advancement but that

alone is not enough, for the speed with which technique is adopted, would indicate the rate at which real incomes in agriculture would increase, for if these improvements are not adopted by the farmer, his hope of increasing his incomes may remain a dream. Hence, to generalise with respect to technical advancements made in the agricultural sector, would be unreal, for instance, in the *backward* and the *embryonic* economies, the rate of the adoption of the new technique is painfully slow, with the result that the acceleration of peasants' incomes accordingly slows down. This is apparent enough. It has to be clearly understood, that in this context, peasants' real incomes are determined more by the exchange terms as between the farm produce and industrial goods. And this is important rather than that the real incomes depend on technical advancement. It may also be pointed out that the real income has some relation with marketing costs, for as explained in the last chapter, they would seriously be affected by their rise even if the agricultural produce sells for a higher price. A greater profit is sliced away by the middleman in the case of the high selling costs with the result that this real income is affected, in so far as it filters to the farmer through many middlemen.

Impact and Inference. From the above brief analysis, it is clear that the impact of agricultural disturbances on the peasants and their incomes is complicated by the intervention of many extraneous factors, which may be absent in other sectors. In agriculture, the impact of the rate of adoption and application of farm technique, useful to the farmer, determines his real incomes. In this respect, the impact of real incomes on the disturbances (in agriculture) is noteworthy. But the impact of different cost-price relations in agricultural sector is not identically the same as in industry. The impact of different sources would, of course, be dissimilar, but so would be their complexion. This being so, it may be easily imagined why a distinctively separate explanation of the cyclical movements of agriculture is called for. The impact of general business fluctuations on agricultural produce remains to be analysed; and in this connection, it may be stated, that with boom conditions, with rising employment, and with mounting income in industry, it is more or less probable that the demand for agricultural produce may rise along with prices obtained by the farmer. But the rise in the prices may not be of the same proportion, for whole of the expanded income may not be spent on the purchase of agricultural raw material. And with the growth and popularity of synthetic products, the diversion of the income from the genuine raw materials to synthetic produce may also be expected. Thus business boom in agriculture may not

be of the same proportion. On the other hand, with the onset of the depression, demand for agricultural produce may shrink considerably.

Types of Fluctuations The first distinctive trait of agriculture is that fluctuations are of several types, and therefore, of a complicated nature, at least three main types could be distinguished, the seasonal, the annual and the cyclical ones. The *seasonal* ones are quite common and are dealt with at length. The annual fluctuations as witnessed in agriculture are in respect of certain crops, which may be more productive in certain years, but unproductive (relatively) in other years. In this respect, too agriculture is distinct from other enterprises, where the seasonal and the annual fluctuations are seldom witnessed. The third type, the cyclical fluctuations are put into motion by general business cycles and partake of its characteristics. In addition, prevail two other types, the short term and the price fluctuations, which also distinctly prevail in agriculture, with resultant greater instability.

Short Period Fluctuations These instabilities are of a shorter duration, but their severity is intense. These fluctuations may be due to unforeseen causes, e. g. locusts, diseases, pests, etc., which may befall the agriculturists very unexpectedly and all of a sudden, but which may leave him remorseful and disgusted. These fluctuations are not regular, for none could accurately predict their onslaught nor the disaster following them. Even the authorities may be unprepared for these, hence the after-effect may also be equally disastrous, both the farmer and the state may have to suffer on account of these. It may be pertinent to observe here that these unforeseen calamities are now under investigation and international agencies have been set up to give warning signals as to the onslaughts of locusts and floods, so that some countries likely to be ravaged by them may take precautionary measures. Still, their severity could be reduced but not their frequency, and the only thing that could be said in this connection is that precautionary measures are on the increase. Still, these fluctuations collectively decrease the income resources of the peasant. Their severity has not been quite eliminated. And then it must be said that even with all the advancement of science and technique to make agriculture proof-weather and disaster-proof this industry still remains exposed to the encroachments of nature. Short term fluctuations are also disastrous in the immediate run, but may not be so incapacitating as to render the farmer liable to some permanent and longlasting injury, recovery is possible, soon after.

Price Fluctuations Attention may not be diverted to price

fluctuations which agriculture experiences, to a greater degree than does any other industry. Why do these fluctuations operate? It may be pointed out that they arise out of the relative rigidity of marketing charges. These remain rather fixed and do not vary with the produce marketed. The gap, as between retail and farm prices, remains whether prices obtained are low, or high. Thus, on the prevalence of slightly lower retail prices (due to any cause, temporary or fleeting) the farmer loses much, for he does not obtain a remunerative price. In this respect, certain facts emerge : *firstly*, the supply of agricultural produce is relatively inelastic, and the output of isolated commodities could not be altered in response to changes in prices, because of the fact that the sowing may have already been done before price could be anticipated with any exactness. Alterations could be made, but on a long range, and in the long period; they could not be readily made by the peasant. And, in the second place, while the agriculturist may have to accept a lower price, the distributor-middleman, responsible for marketing operations does not accept a lower remuneration, for the services he performs. Hence, the incidence of these marketing charges is heavy for the farmer who does not get a price sufficient for him to cover even his cost. For dealers, prices are higher than for the farmer, and only a few of these are adjustable when they have to deal with a lower output and when sales diminish. In the light of this, the distributors are not prepared to accept a cut in their charges, which, in certain backward countries, are fixed by custom and tradition, and not by competition. Next, marketing services are being performed by organisations, which enjoy more or less monopolistic powers and belong to non-competitive groups, with the inevitable result that these charges partake of the nature of monopoly costs, and in this respect they tend to be extra-heavy and also extra-rigid, and the price which the peasant receives, is very low. Hence, the distributive margin widens. *Fourthly*, a number of marketing services are performed by those agencies which do not specialise in agricultural marketing, (such as railways) and the charges these organisations impose upon agriculturists are of a fixed nature. And, above all, the ignorance of the farmer accounts for the fixity of the charges and the lower price that he receives for his produce. In this connection, the number of intermediaries, especially in backward countries, is relatively fixed, with the result that even in the boom conditions farmers continue to be fleeced while under depressed prices, these charges do not vary, in respect of the middlemen and the intermediaries who do not relish the idea of obliging the peasant by accepting lower remunerations. Thus, in the light of this analysis, it may be observed that price

fluctuations, especially on the downward, are rather frequent, with the result that these add to his troubles in not an inconsiderable fashion. This is a lamentable fact.

Seasonal, Annual and Cyclical Fluctuations Seasonal fluctuation last for certain seasons. These precipitate due to the fixity of middleman's margins, and fluctuations in supplies, are more frequent in the agricultural production, than in any other pursuit. Seasonal variations occur both in supply and demand. Also, the seasonal character of agricultural enterprises is responsible for disparities as between the supply and demand for its product. These are not of a permanent character, still they are sufficiently potent to adversely affect the peasant, and deplete his reserves, if any, with the result that they leave him much poorer than they found him. The wiser lot may guard against these. *Annual fluctuations* arise out of *annual variations* in respect of certain crops and plantations. These variations in the yield of certain crops and plantations are always foreknown to the agriculturists. But there are also uncertain elements, which account for weather variations in certain years, which could hardly be predicted, still these afflictions do affect the agriculturist very adversely. Thus these annual fluctuations are sufficiently serious and may be severe in their incidence on crops and their productivity, and consequently on the peasants' income. Annual and seasonal fluctuations may sometimes conjoin with the result that the farmer may find himself in great affliction and hardship. Cyclical fluctuations may only reflect the general business cycle, and their causes, and course may partake of the nature of the general cycle. It may be advisable to understand here that the three may sometimes be simultaneous.

Income Instabilities Attention may be devoted to the income instabilities arising out of agricultural fluctuations. In agriculture, as in no other industry, the frequency of agricultural fluctuations is greater. This means instability in the agricultural arena, more than in any other industry. This is a remarkable fact, and one which needs to be countered by the planner and the peasant alike. Seasonal fluctuations also work to the same effect, while the cyclical ones, admittedly exert in producing income instabilities, which, therefore, get precipitated in agricultural enterprises. Added to these instabilities are the other two instabilities, those of the short period and those arising out of the instability of price. Price instability is a disease chronic for the agriculturist and one which he may not be able to counter either and exert pressure on him to generate income instabilities and grave hardship. And

to these instabilities may be added the short-period ones, which also reduce peasants' incomes considerably. Subsidiary industries may be prescribed for the villagers; these are based on agricultural produce. The inevitable result is an all-round instability of income, which faces the peasant, whether he works in the agricultural sector, or in the non-agricultural sector, in rural areas. This accentuates income instabilities in rural enterprises. This fact emerges from interlinking of different enterprises and their dependence on agricultural produce; output variations produce income instabilities in the rural sector.

Output Variations. Wide are the variations in agricultural output: they do not, merely, arise from the cyclical and other fluctuations, but are due to mixed causes. Of course, the seasonal variations, the annual instabilities, and the cyclical fluctuations, all these influence output and affect its amount and character, but more significant are price fluctuations, for if, in one season, the peasant is in receipt of a lower price, sowings of that crop for the next season are reduced with the result that a lower price might adversely affect output. But considering the inelasticities of production, which arise out of the traditional character of these farm enterprises, one may not put a premium on these. Still, their influence on non-traditional peasants may be felt at least, on the prospective produce. Another point may be noticed; short-period and unforeseen fluctuations (in agriculture) may vary the volume of output and be effective in shrinking the produce, in their full operation, which may rise in the event of their absence. To these may be added the operation of law of diminishing returns; its operation results in a declining in output but, in case, he is able to combat it (and this he could only do if his resources permit the application of scientific devices to agriculture, but this is uncertain in view of income instabilities), the produce may remain at the normal level, or, in exceptional cases, may also incline. Thus the instabilities of output are a permanent feature of agricultural operations, the nature of which also lends to the same result, for if the farmer were to be a little out of tune with the time-table set by nature (and his calculations could be wrong, sometimes) he would stand to lose in point of productivity, with the result that with wrong judgment his output may shrink considerably.

Seasonal Variations. This section gives a description of the seasonal and the short-period variations in agricultural production and output. Variations in regard to demand and supply are noticed for they form a part of agricultural cycles

in the short-period, and persist in regard to crops and livestock. Attention is devoted to adjustments, brought about by prices secured for produce and output. Seasonal variations are of superlative importance in agricultural industries, for the fact is that agriculture is itself a seasonal industry, and susceptible to seasonal changes which are important from another point of view, the diversified system of agriculture is to be adjusted to seasonal variations, and the cropping season. In this respect, too, the seasonal variations are important in farming.

Demand and Supply The first variation is with regard to demand and supply of agricultural produce. In different seasons, there are variations in demand, demand for food, for instance, changes as between winter and summer. Similarly there are variations in demand for clothing for which agriculture supplies raw material. In certain parts of the year, in certain festivals, is there a peak demand for certain types of food and fruit, this peak demand is productive of peak prices as variations in supply do not occur at the same time and nor are of the same magnitude. These variations are inherent in agricultural production, for in the season, when a certain article is being produced its supply is also at the peak. It may be of the nature of a glut, that may bring about low prices primarily because of the temporary glut, created by the seasonal character of agricultural production. It may be suggested that the supply of certain vegetables is only available in certain parts of the year, while in other parts of the year, supply is very much scarce, for a particular vegetable is out of season then. Demand for agricultural goods can be spread over the whole year for certain products, such as cereals, standardised foods and certain other processed products. On the side of supply, the reverse is true, for the fact is, that supply is very very seasonal, for farm output is affected by weather, season and biological factors. Only a part of the produce could be stored, and obviously that part, which is expected to yield high prices. In the case of stored produce price range would be high and goods stored only in anticipation of rising prices. In regard to glass-house culture, it may be stated that expensiveness of this method of cultivation and its small produce are twin influences which make for its restricted application, which, in turn results in raising prices. These inflated prices are prohibitive to most consumers, who cannot afford to pay for the purchase of products, thus preserved. In this matter, agricultural produce diverges in respect of supply and demand, because of seasonal variations.

Crops and Livestock Apart from the seasonal character of the produce, there are biological factors which operate in a

seasonal manner. Livestock is less liable to seasonal variations, since its feed is usually available, for a long time, in most countries. The cropping season is generally limited to a few months in the year. It is possible to store some agricultural produce. The conversion of produce into a more durable form is equivalent to its storage, with this difference that the price that is paid for processed produce is less than that for the freshly stored produce. The price position is also a little complicated, in view of the fact price is higher than for the fresh produce, as obtainable in season. In stored articles, the price position gets complicated, in view of the fact that the producers are faced with the alternative of either disposing off their produce when the season is on or withholding supplies, and storing them for a better price when articles become very very scarce. Storage costs the producer has to assess. And the second consideration is that there is the risk of the article getting out of fashion, unless its demand is highly standardised and well established, but this is rarely the case. Then there is the postponement of receipts which a producer may get, were he to sell the produce in the season and as fresh, but if he stores it and waits for some time, he would not be able to get the price that he, otherwise, would have got, if it were sold just then. Special buildings and equipment may be required for storing the produce, and this may be costly. The product stored may decay and be unfit for sale if storage is even a little defective. And lastly, there may be processing costs before storage is possible, and this may involve heavy expense. The preferences of the consumer are also noticed, and (in the light of the above mentioned facts), the farmer may find convenient to go ahead with the storage of the commodity. He is guided by price differential, and judging by this test, the producer would go ahead with his storage plans. The producer could get his produce being cashed at once or at a later and uncertain period. And in the light of this, would storage be done. Still, it must be conceded that, storage notwithstanding, supplies may not be equated to demand for the product, over a whole year; this is problem of adjustment.

Prices and Adjustments. Prices have a part to play in seasonal variations, which are adjusted thereby. Usually price changes are more sporadic and erratic than other changes, e.g., those in output, and in the costs of production and preservation. Prices fall more heavily soon after the harvesting season, with the probability of a rise after some time. In fact, the later (out of seasons) rise of prices more than compensates storage, or transport costs (when produce is exported to distant markets). The farmer may not obtain the necessary credit to enable him to

incur costs of storage and of marketing, under the circumstances, he is often compelled to sell away the produce, and in certain countries, at throw-away prices. This is the state of affairs, in the case of farmers, who are very short of reserves and without staying power. Another factor to be reckoned with, is the persistence of such circumstances as may make it obligatory on him to sell away his produce at such throw-away price, his anxiety to convert his produce into cash is understandable in the light of the fact that land revenue realisations are also timed with the harvesting seasons while the pressing demands of the moneylender may compel him to convert the crops into cash. Institutional factors make easy the availability of credit from village shop-keeper, who is often the moneylender whose readiness to buy the produce, is also inducive to the farmer to get produce converted into cash. In short, most farmers, in their anxiety to sell the produce just after the harvesting season, depress prices of the commodities they could stock and, later on, sell at more remunerative prices. Again the trend of certain prices to fluctuate much is another factor which makes adjustment through the prices difficult. Prices are, in the light of this analysis, unable to make up for the deficiencies of the supply of agricultural produce, when out of season, with the result that the position in this regard is rather inelastic and the seasonal variations have their full play. All the above forces, coupled with the lack of information from which the peasants suffer, account for their intensity.

Seasonal Agriculture In the light of the above forces and factors, it is not difficult to conclude that the character of agricultural pursuits is more or less seasonal. Agricultural products would be sold, preferably, even in a distant market, rather than they be stored for future consumption for apart from incidence of other forces, the ignorance of the farmer is also responsible for the quick disposal of his produce. The remedy is, therefore, to counter the seasonal character of farm production. Neither the uncertain conditions (responsible for the growth of the crops and the livestock) nor the seasons themselves could be changed, nor the perishable character of the agricultural produce be changed. Hence, seasonal variations could not be multiplied.

Annual Fluctuations Annual fluctuations are important in agricultural pursuits. Farm produce does vary from year to year due to weather fluctuations kindred variations as also due to inherent biological causes. In regard to these it has been observed that certain fruit trees blossom heavily in alternate years, while other years are comparatively dry for them. Thus the produce and the harvest may be heavy in certain years for

certain crops and fruits, and low for others. Another point is that the produce is lowered because of drought in one year, and the heavy rains in another: this factor is significant in the case of commodities which mainly depend on rains as also in economies which do not have the well-developed means of irrigation. Thus annual variations in respect of agriculture recur because of all these factors.

Variations in Yield. Attention may be focussed on the variations in yield of different crops. The variations, under observation, relate to annual yield. Some variations in crop yields are unexpected, while the others anticipated. The former result in fluctuations in the price of the commodities in question. Thus it is observed that variations in the yield of crops, resulting in price fluctuations, make the intensity of annual fluctuations very much felt by the farmers. The supply of a crop does not depend on one country or region, for the shortage in one region may be offset by supplies from the other. Also, the expected variations in yield, could be offset by imports, arranged from other countries in time. Thus these fluctuations may be prevented in time, but another noticeable factor is that the larger the area under a particular crop, the less likely is the variation in supply; this is obvious. But usually, the area under a particular crop is not extensive, for the farming units in certain localities are not big enough to increase and diversify the supply; net yield of some commodities is not expectedly going to be large enough, with the result that fluctuations, in a particular locality may be high. It is local influences that predominate in the prices of the produce. Hence fluctuations in agricultural produce do have a determining influence on local variations in point of the locality under reference. Prices may be reduced in one locality, due to bumper crops, there; while they may rise in another locality due to shortage there. Variations in output, as far as annual aspects go, are able to influence other crops, for the fact is that their prices move sympathetically to price fluctuations. This sympathetic movement of prices, was discussed in the last chapter "Adjustment by Pricing", suffice it to point out here that price fluctuations may have other repercussions.

Prices, Stocks and Supplies. In price formation, the demand factor is also to be considered, for its elasticity or inelasticity is to be reckoned with in this context. If the demand of the product is of an elastic nature, the shortage in respect of that particular product, could not raise the price to that height as it would if the demand for the product is having more substitutes. Its price would rise less, than in the case of the product with

less substitutes. And then it also happens that the product, which has been processed does not retain the same inelasticity of demand as the one which has not been processed, but is fresh from the farm. Livestock prices fluctuate less from year to year for the simple reason that production is more under the control of man, than is of crops, and therefore adjustable. Also the demand for live stock and the cattle products is elastic and responsive to price changes. It may be maintained here that the annual price variations are somewhat eased by the possibilities of storing being extended to the various crops and their products. In this higher than they are in bumper years, for the simple reason that the prospective prices are expected to be rather low, even below the normal in the years to come. Thus, prices of the commodities may also behave abnormally, due to the fact that these could be stored. But if this possibility is ruled out, price behaviour would be again normal. On the other hand, pent up demand, being released all at once (as might often happen after a war) might be instrumental in raising prices to exceptional heights. The conclusion is that the stocks of the commodity over the number of years, would only be possible of being spread if the costs of storing, the current prices available, and the future demand, all warrant it. All these factors have to be taken into consideration in order that supplies may be spread over a number of years. Still the risk is considerably increased as the period of holding stocks is lengthened, the stockist would have to take this factor into consideration, when starting out on his venture of spreading stocks over a number of years.

Mercantile Risks The merchant would have to take stock of the fact that with the spreading of risks over a number of years, the position gets somewhat deteriorated. The longer the period of storage or carrying of the stocks, the heavier the risk that he is to face. The longer the time of holding stocks, the heavier the risk that the stockist has to face, in fact uncertainty in regard to the saleability of the produce also emerges from the same factor, under consideration. And then the changing demands for agricultural products, may be another risk factor which may enter into the calculation of peasant-stockist. Another one is that of the rotting of the produce. When stock is carried over a number of years, there may be risk in respect of its demand and supply in the prospective period. But this is not all, for there may be risks in fluctuations of a seasonal type in the years to come with the result that the agriculturist may produce more. Price indications are also uncertain for the best calculations on both the part of the experts

and the commercial people, make the position still unsettled, for no calculations of prospective data could be perfect or accurate. Trade relations may also be another uncertain factor, in case of the trend of trade with those regions which produce more of that commodity; the risk element may be increased, and it may not be worth while to carry the stocks over any length of time. Variations in output in other countries, too, would be another uncertain factor, for even the best informed stockist could not foresee the future to that correctness, that he may be able to correctly forecast the amount and the quality of the produce in the foreign countries, his acquaintance with production trends in the foreign countries is usually a nodding one. In this respect, the hazardous nature of the efforts of the merchant to carry the stocks is very real, especially when public opinion is not favourable for he may be accused of hoarding by starving people, and by starving demand, and with a view to charging high prices. In view of all these, it may be stated that the inequalities arising out of the annual fluctuations tend to persist.

The Budget. In the annual variations, the element of uncertainty and risk is pronounced and paramount. Prices exert an influence on the present and prospective prices, and outputs of various types of agricultural produce, which may vary from year to year. Farming the annual budget, in terms of annual produce, prospectively, the merchant may be tempted to carry the stocks over a number of years, but the hazards of the venture are too great for the merchant to shoulder. Thus disparities in respect of annual variations and prices, tend to stratify in the agricultural section. Annual fluctuations differ from the seasonal ones in that the effect of the latter is of a fleeting and temporary nature, while in the case of the former it might last well for years.

Cyclical Disturbances. They present a major problem, for often it so happens, that all the three types of fluctuations coincide, with the result that the plight of the peasant is very very bad. Hence in the interest of stable agriculture, a detailed examination of cyclical fluctuations in the agricultural arena should be made, if only to be able to counter the cycle at its inception. What are the initiating impulses to the cycle. What are the different phases of the same? And what is the average length of the cycle? All these questions are not only interesting in themselves, from the academic point of view, but also from the practical point of view, for without an understanding of the same, it would not be correct to try to stabilise agriculture.

Individual Crops and Weather Influences Most variations of individual crops are with reference to weather influences. Cyclical fluctuations vary from one crop to another, with the result that the cycle in one crop may be of a shorter duration, while in respect of other crops, of a longer duration. One must distinguish as between the two types of the cyclical disturbances, one in respect of individual and isolated crops and the other relating to general agricultural operations. Cycles of output and prices are confined to particular crops, and it is difficult to predict them, for the weather factor, and other uncertain influences do operate in this direction. Weather influences on the farm tend to intensify fluctuations. The farmer could not adjust weather to his plans, he has to adjust his farming operations to the weather, and the continuous adjustment and the readjustment, that he has to make goes to produce cyclical trends in the production of crops. A series of such adjustments and readjustments produce the cyclical variation in the crops under cultivation, with the result that the cyclical trends may operate, even when the farmer is not conscious of the same. This is important and significant both for the farmer and the analyst. It is to be recognised that though the farmers may not be able to control the yield (and modern science has advanced to a stage, where even this possibility could not be ruled out) he could certainly modify, more or less the produce of his crops, in order that the income does not decrease or that the market is not lost. But this leads to the subject of profitability.

Prospective Profitability Another important factor that determines the choices and the decisions of the agriculturist and the tiller is the future income from crops that he cultivates on his farms, every farmer does make some estimate with regard to this aspect of crop production and agricultural enterprises. His future decisions are, however, based on present trends. In this connection, account should also be taken of the *prime* and the *supplementary costs*, for, as pointed out in the chapter on pricing, the nature of costs exerts a lot of influence on the future and the present decisions with regard to the profitability of crops and other enterprises that the farmer undertakes. In case demand is inelastic, it is probable that incomes and prices would fluctuate together, for with rising prices, incomes also rise, and with falling prices, incomes may fall. The fall of incomes tends to be steeper, than the rise, the reason is that the cost structure in agriculture is inelastic and costs lag behind prices, with the consequence that the price-cost margin is usually narrowed in the event of rising prices, and the loss in the case of declining prices would be the greater. An important

part is played by the prime and the supplementary costs for if the ratio of prime costs to total costs is high, a smaller output tends to reduce total costs, and it is probable that incomes and prices may be raised. But when the demand is elastic, and the prime costs bear a low ratio to total costs, the price is depressed but when prices and incomes move inversely the profit margin would be lower. The nature of costs has an important bearing on the nature of prospective profits and their range. It may be pointed out, however, that the expectation that the present incomes could be maintained, is only an illusion, for the fact is that in cyclical disturbances, even with respect to a single crop, income fluctuations are registered. Also, single-crop effects may not tell heavily on profitability if the system is one of diverse cropping under specialisation, however, the profitability is considerable in terms of income and output.

Output and Income. Attention of the reader may now be focussed on the nature and the trends of output and income on farms, for they determine the range of profit expectations, and the volume of profits, present and potential. The farmers increase their output, when price is high relatively to cost, and reduce it when the price is low relatively to cost. This is obvious, for the farmer, in his efforts to make profits, wants to exploit the price-cost margin, and suffers when prices obtained are lower than his costs which are mostly inelastic in character. It is not an isolated farmer who takes this decision; it is the cumulative decision of all farmers; and that matters, from the economic standpoint. But these decisions have only an effect on the next year's crops and this prospective effect will have to be weighed in that light. The crops to be cultivated do respond to price-expectations. The cumulative decisions do not bring about a cyclical movement in respect of all crops, for the price change in respect of one crop may be able to bring about a change in respect of that crop only and not for all other crops. But if this crop belongs to a species of similar crops, whose prices have been affected, or are expected to be affected, the change would be in respect of those crops as a whole. In regard to livestock and plantations, it would be hardly within the realm of practical policy to anticipate changes to be made, for the period that would elapse between the cultivation and the reaping of the "harvest" is considerable, and not a single *calculating* farmer would decide to destroy the existing stock simply because the price trends seem to justify this action on his part. It may pay to delay the mating of animals, but these and similar measures may not be potent enough to bring about the desired adjustments. And even if the peasant decides

to go ahead with his adjustments, he would only be able to do that at a great cost to the enterprise, and he may repent later on for his hasty step, for misjudging the trends of prices and incomes. In this connection it may be pointed out that the cycle of under production and of overproduction as in the long period, would be a permanent feature in agriculture.

The General Agricultural Cycle From the above, it need not be inferred that the cycle in agriculture is only with respect to individual commodities, there is also the general agricultural cycle. And this general cycle is a part of business fluctuation. It affected world agriculture, for quite a long time especially in the thirties. This cycle, which was the longest on record, lasted for about seven or eight years and could be described as the general cycle because all commodities underwent an all round depression. This depression preceded business fluctuations and also lingered on for some time. The general cycle is not always of uniform length, its characteristic is that it affects commodities, and farm products. The cycle often spreads to other countries, with the result that incomes of all farmers decline rapidly. There is a continuous fall in agricultural prices. A glut in the market brings about this decline, with the result that the intensity of the cycle is felt more in the agricultural sector, and the agriculturists suffer the most. Compared to industry, agriculture suffers more heavily, for agricultural prices decline more than the prices of industrial goods, and while the industries could adjust their capacity to produce, supply in the agricultural sector is more or less fixed, with the very obvious result that agricultural prices do not get arrested in their fall. Another point is that falling prices make the farmer work harder than ever before, for he wants to have at least the same income, therefore he tends to produce more, for a greater quantity of the produce that would give him the same income. This is sufficient to ensure that the fall of prices is continuously on the downgrade. But it could hardly be said that the agricultural depression would synchronise in all countries at different times. But the fact remains that the cycle does grip all countries, though at different times, and in different intensities. In India, for instance, the cycle was at its worst, while in certain other countries, the same depth of the depression was not reached. Again, the cycle in agriculture is also severer than it is in industry, for the reason that with the shrinkage of these industries, their demand for raw materials also falls and most agricultural raw materials do not find any demand. In regard to food, too, there is some economy, for wastage is eliminated as a result of falling incomes.

The Initiating Impulse The agricultural cycle is initiated

by some impulses, which if recognised in time, would enable the peasant and those in authority to ward off the evil day and thus save the national economy from impending disaster. It may, therefore, be proper to understand how the initiating impulse works. In the movements of agricultural produce, some authors have noticed the "initiating impulse". They think that there is a relationship between the course of prices and agricultural production. The initiating impulse, in their opinion, arises out of the movements of produce which could be correlated to the subsequent depressions and booms. If the crops are good and in abundance, the result is that the movement is towards an unremunerative price, the signs of the depression are visible, but if the produce is good, but price rising, signs point to boom conditions. It is possible that due to the complexity of conditions prevailing in the sphere of agriculture and also because of the variety of agricultural cycles (as described above) conditions pointing to a boom or a depression may not crystallise for some time and it may not be possible to recognise them either. In this maze of agricultural conditions and trends, it is difficult to say what the initiating impulse may be: it may be a seasonal cycle, which may set the thing off, or an all-round annual cycle responsible for initiating the impulse, or general crop failures or disasters of a similar type that may initiate the cycle. All these things may happen together or any one of them. Still, the fact is that the cycle is initiated by falling prices, and often rising productivity, for reasons explained above. When this happens, it could be taken for granted, in this context, that an agricultural cycle is on its way. It may also be pointed out that sometimes, the declining demand (from industries) for the agricultural goods is also initiating impulse.

The Average Length. What is the average length of the cycle? This is a tough question. The cycle in agriculture is of varying length. It may vary from commodity to commodity, but the *general cycle* is of the duration of about six to seven years, while *crop cycles* of about $3\frac{1}{2}$ years. It is difficult to form some general conclusions; the average cycle's duration depends on its nature. If it is a seasonal cycle, it would not last more than a season; but an annual fluctuation may be of about a year's duration. On the other hand, a "crop cycle" may be of about $3\frac{1}{2}$ years' duration. And an important thing to be noticed is that the duration of the general agricultural cycle need not be the same everywhere. For there is no *pure* general cycle which is always accompanied by some other disturbances; seasonal, annual or crop fluctuations. Hence, its duration depends on their combination. If a general cycle coincides with

seasonal disturbance, the result is its lengthening, but not as much when it combines with annual or crop cycles. It appears that the usual length of the *pure* general cycle is not more than (about) four or five years. And that was why the length of the last depression also varied as between different countries, in some countries it lasted only for about four years while in certain other countries, it was as long as about 7 1/2 years or even more. That was why the intensity of the cycle also varied, for where the cycle combined only with seasonal or annual fluctuations, its duration was short and intensity low. But where crop cycles also mingled with it, its intensity was high and duration very much prolonged. This factor was responsible for intensifying the cycle in India, and also for diluting it in such countries as Russia, for the amount of planning they did, was effective in at least eliminating the seasonal, the short period and the annual fluctuations, with happy results. The point to remember is that the combination of the different cycles alone determines the intensity of the cycle and also its duration.

Special Commodities Reference may again be made to the role of special commodities. Some commodities are more important than others. Obviously, those commodities, which are in demand, and those which are occupying the largest number of cultivators, would, if their prices fell, seriously affect farmers' incomes, with the result that a depression would be initiated, in all its intensity. For instance, the role of the potato crop, in Ireland, is not to be underestimated, while the role of the cotton crop, too, need not be underestimated as far as the Egyptian economy goes. Thus if these commodities suffered, the whole agricultural economy may also suffer. The lowering incomes of the majority of farmers adversely affects other farmers, the purchasing power of these farmers having contracted, the incomes of other peasants, too, registers a serious decline and the cycle is most likely to "pread". Some commodities may not be so important and the crisis (in regard to incomes) may not much affect other farmers, or their incomes. The point is the incomes of the "key" farmers which when declining would set the cycle in motion and be another causative factor. The analyst must assess the relative importance of crops and people employed on their cultivation. Thus crop cycles would also be able to cause the cyclical disturbances in the whole sector of the agricultural economy. Worst of all would be cycles food tillage, as they would adversely affect the position of the subsistence farmer and also his family farming, with very serious consequences for everybody. The real income of the peasant declines and the fall would be heavy, indeed the

conditions of the peasants may be also quite miserable all round. Thus the cyclical disturbances in agriculture have to be judged in view of different commodities affected, for if they are the *key* commodities, the cycle would be interser than if the commodities were of an insignificant nature and did not occupy an important place in the economy. And then the intensity of the depression, in different commodities must be taken into consideration, for it is afflicting the key commodities, the position gets endangered in respect of all other farm incomes and the depression all round deepens. To this may be added a rider; that the important key commodities may be all right, and still the depression be initiated, probably due to causes operative elsewhere, or may linger in spite of them.

Prices and Profits. Attention may also be devoted now to differential prices and profits. It is their behaviour that detere mines the nature of profits; with the maintenance of the profits range, the cycle may not be said to exist. Cyclical fluctuations reflect profit fluctuations arising out of price fluctuations. In this respect must be analysed the trend of prices in the courts of the general agricultural cycle. Pricing is the outcome of supply and demand, the demand for food fluctuates much less than the demand for other articles; even when incomes decline, the demand for the food is the last to be cut down. And the foodstuffs, usually, are highly perishable with the result that their supply could not be heightened in times of emergency, nor spread when required, nor stored except at a heavy cost. Consequently, the purchase of foodstuffs, could not be accelerated, nor postponed in accord with the changing circumstances of the consumer. In this context, it may be generalised on this basis that the demand for food is more or less inelastic, with the result that the price of food rises. Price falls heavily as supplies increase, for food consumption does correspond to supply. With the recovery of incomes its demand does not rise, nor shrink with a fall in income levels. And this analysis holds truer of the place where food habits are rigid as also its demand pattern. Doubtless, demand fluctuates in the industrial sector more frequently than in the agricultural sector, with the result that the supply holds the field here. In non-agricultural sector, these disturbances are countered by adjustments made in supply; therefore, the price varieties are not many; prices can be more or less stable. But in agriculture, supply is also rigid, and demand and supply seldom equal, the gaps in respect of the same are many and more recurrent here. Also the cost structure is of an inelastic structure and the position in this regard is rigid. Thus, the farmers are worse off because farm supply does not respond quickly to short-period price changes, hence the peasants have

to be content with a low profit margin, which in the case of inelastic costs, is sometimes negative. That is why the depression in the terms of incomes, prices and profits is the deepest in agriculture. The lingering effect of the cycle is explained by the fact that adjustments in supply position in agriculture are painfully slow to be made similarly those in regard to costs are also not possible in the short-period, or seasonally.

Agricultural Cycle A few words may be said to sum up the general impression about the agricultural cycle. Crop cycles are in respect of individual and isolated crops but they spread to other commodities, hence crop cycles, in the more important commodities may initiate general cycles. Also cycles in agriculture are mostly combined cycles two or three cycles may combine to produce a cycle of severe intensity. A dangerous trend, it is fraught with grave consequences. Cyclical disturbances, in the sphere of agriculture, are not of the same type as in industry, for the simple reason of the inflexibility of the conditions of demand and supply their divergence and different ranges. Still, not much is known about cyclical disturbances in the agricultural sector, and of their nature, very precisely.

The Income Aspect This survey of cyclical disturbances in agriculture leads to the conclusion, that the income aspect of depressions and booms is more important than any other. This is the real aspect of the cyclical disturbances to all intents and purposes, if the income of the peasant remains unaffected cycle may not be said to have disturbed him. From the points raised in the foregoing, it may as well be concluded that income variations are the only visible evidence of cyclical fluctuations for the peasant. True, that income does not quickly respond to cyclical fluctuations, for the cost-price structure in the agricultural sphere is not so elastic, nor is the demand-supply situation so responsive, in agriculture, as in the industrial sector. Still, one could safely follow the course of the cycle by tracing income variations. Hence, to all intents and purposes, this is the one aspect that must be carefully followed by the analyst, for without this, it would hardly be possible to correctly visualise the intensity and the nature of the agricultural cycle. This section studies this aspect of the question in its various aspects. The impact of population growth on income and its variations in the light of the population changes is followed, as also real income and its trends and improving technique on its effect on real incomes. Regional differences, as reflected in income changes and the cost price variations, too are examined in this section.

The Impact of Population. In this connection, attention is drawn to the impact of the variations in the population of a country in its effect on national income, with special reference to the agricultural sector. The increase of population means a greater pressure on land and the resultant low incomes. The increase of population is not accompanied by an increase of the amount of the land under cultivation, with the result that productivity could not increase proportionately, and also the law of increasing costs or diminishing returns bears upon this state of affairs. With higher numbers and with law of diminishing returns in operation, the productivity of agricultural sector may also register a fall. But fact and experience of the last century of demographic growth have not borne out the truth of this statement. In fact, productivity in the agricultural sector has expanded to rule out all fear of starvation. It is recognised, that the human will to control numbers has been quite strong, in fact, strong enough to combat the growing pressure on land. This is how things have developed in the last century, with the result that the standards of nutrition or living have not much declined in the agricultural sector, although the population has been showing an increase in its rate of growth. Undeniably, the increase of numbers in the underdeveloped and the backward economies of the world has been responsible for the decline in their living standards. On the whole, it appears, likely, in the light of the gloomy forebodings of Malthus that the increase of numbers may depress the living standards, as to outweigh the operation of the Increasing Returns in the industrial sector. This means that increase in number of the agriculturists may raise rents comparatively to real incomes, thus leading to an increase of tenancy. It looks that this theoretical framework does apply to the backward and the embryonic economies, for all these things have worked out in the same manner, as predicted by Malthus, but it must be clearly understood that a halt is being cried now, and things are improving. But left to itself, and with the prevalence of *Laissez-faire* in its most unrestricted form, the doctrine of Malthus appears true. The demand may register an increase, and for the larger part of the poorer people (as per law of family Budget expounded by Engel) incomes may be spent on the necessities of life, hence, the prices of agricultural foodstuffs and such other things may rise, thus lowering real incomes. Therefore, an increase of population, other things being equal, may bring about an increase in the cost of living and decline in real incomes.

Real Income. The questions are what happens to real incomes, and how these are raised. It may be conceded at the

outset that real incomes rise as a result of technical efficiency in the agricultural system. The same amount of goods and commodities in the agricultural sector is produced with a smaller quantity of factors of production, so that the factors "saved" could be utilised for the production of other commodities and added to the total output, which may be available for consumption. The level of real incomes is, no doubt, the most important factor which may determine the demand for foodstuffs and other necessities of life. If real incomes are low, satisfactions in respect of food and other necessities of life would only be partial. The demand for food, an absolute necessity of life, is elastic in those countries, where poverty is below the subsistence level. This is because the demand for food expands, when their incomes rise, and *vice versa*. In the lowest income groups, the demand is only for the inferior quality of food and when income increases, the superior foods are in demand. Hence, with a rise of real incomes, the demand for the food rises qualitatively. Another fact is that with rising incomes, the demand is for divers types of foods, and not for the same standardised ones. This is noticed even in the most backward countries, for people like to diversify their food consumption, with a rise in their real incomes. In fact, the demand for all foodstuffs may expand, though at unequal rates. With rising real income, the demand is satisfied and the exhaustion point reached. This is an important consideration to be reckoned with in this analysis. It may be observed that they continue to spend increasing amounts of money on food, for the shift is then from the cheaper stuff to the dearer one. Hence, the probability is that the expenditure on the food may not rise with the rise in real incomes. For cheap foodstuffs demand is hardly affected by an increase in real incomes for the consumption of food, if of the cheapest variety, is essential to the maintenance of human life. The demand for food may also be affected by the distribution of incomes. The nature of demand for agricultural food is smaller with unequal distribution of incomes. The more equal the distribution of income, the greater is the demand for agricultural foods. Real incomes have also to be viewed in the light of marketing costs, which are more or less of an inelastic nature. It may be stated in the light of this that the amount paid to the farmers would not increase proportionately with the rise in incomes. After all, farmer's real incomes may not rise. And this may also be due to the increased marketing costs, because of rising costs of distribution, goods have to travel farther, thus raising the marketing costs. The dependence on the distributors and the middlemen on the part of the richer consumers increases, while the growth of cities also

tends to raise marketing costs. Consequently, the peasant's participation in the real incomes may be not as high, as the rise in the real incomes, in the economy as whole.

Improving Technique. The usual impact of improving technique is to raise productivity and lower costs per unit. If the improving technique occurs in the agricultural arena, the result is the reduction of the costs of the produce; the price may also go down, while production raised, but at a lower cost. One need not analyse the cost-price relations at length, nor even the supply-demand relations once again, suffice to point out that this may depress prices of agricultural commodities. If invention and discovery applies to the whole field of agriculture, prices are depressed all round, for the conditions of demand in the agricultural sphere are more or less inelastic. Farmers would, therefore, receive a smaller price, for larger produce, than they did for smaller produce. This would continue, until the surplus resources and the surplus factors of production are transferred out of agriculture to some other industry. Thus the point is reached when prices in agriculture fall lower than in industrial sector, when costs have been already reduced. If, however, the improvement in the technique has taken place outside agriculture, the demand for agricultural products is raised and the absorption of agricultural raw materials in industry and manufacturing is heightened. Increased incomes of industrial workers increase the demand for the agricultural products. But if the improvement in technique takes place in connected industries, or transport and distributive industries, there is a fall in the costs of agriculture, with the result that the margin as between costs and prices is raised in agriculture, and more people may flock to it in the hope of earning more profits. Some occupational readjustment would be there. If, however, the improvement in technique is of a general nature, real incomes may greatly rise; and also the demand of industrial goods, more steeply than the demand for agricultural goods. The marginal costs in agriculture are reduced; land is, therefore, cultivated less intensively, and labour tends to be shifted to industry. In short, an improvement in technique, generally speaking, raises real incomes.

Immobility of Factors. The behaviour of different productive factors is to be examined, in this respect. It may be pointed out that the shifting or the mobility of the productive factors is only an assumption which may be correct in the very, very long run. In the short period, or in the foreseeable period, the factors of production are comparatively immobile. And as between agriculture and industry, they are comparatively

immobile Capital being specific, could not be transferred to other uses, without considerable loss to entrepreneurs, it could be, however, transferred, when it has completely worn out and needs replacement. Labour, too (when it has become specialised) could not be transferred to industrial uses, without considerable dislocation, and labour, being a human element, could not be forced to move into other jobs it does not like. It is only in the case of new labourers that mobility could be influenced. Family ties are important enough to be taken into account. The difference in the earnings in different professions, does not reflect itself in the shift of labour, without a considerable difference in the two levels. From industry to agriculture, the shift is easier for the simple reason that the industrial labourers are more enterprising and less tied to their homes and hearths. Agricultural earnings have been lower, for the impact of the technique has been more pronounced in the other sphere.

Regional Differences In the growth of technique, the adoption has been different in different regions with the result that agricultural incomes have been increasing at different rates. Land varies both in productivity and location, the differences in regard to fertility of land and its accessibility are recognised. One piece of land may be more suitable for the production of a certain crop than for another, lands may be specific in this respect. Thus are stressed regional differences in the earning of agriculturists due to variations of land, productivity and situation. Similarly, capital, which may be considered to be perfectly mobile as between the different uses in the long run, is also inextricably attached and invested, in a certain piece of land, and this may also cause regional differences. The rise in real incomes may depress certain other incomes, at least of those whose products are less in demand. Also, an improvement of technique may harm those regions, which still employ inferior type of equipment. A reduction in transport costs damages the interests of those who are nearer the markets. Mechanisation could only take place, generally, in large farms. Again, improvements in agriculture in other countries may harm those who are producing the inferior stuff. But this leads to the question of cost-price variations, arising out of differential regional costs.

Cost-Price Variations The regional differences reflect themselves in the cost price relations in the different countries. Some regions may produce at a lower cost because of the adoption of the latest technique, or because of the mechanisation of farms, or because of the increase in the quality of the produce they grow. These changes in the costs bring about

repercussions in other fields, too. The decrease of costs in a country or a region increases its competitive power with the result that the real incomes tend to rise: its terms of exchange may also improve and be in its favour; consequently other countries and the other regions may stand to lose proportionately. A reduction in the costs of the produce which the country buys, could in the long run, harm only its own landlords, though it may benefit every one else. Thus the relative cost-price structure in the two countries is what we have to consider. The number of people engaged on agriculture, is a sign of the comparative progress of the farming sector. But viewed only from the relative cost-price structure, it may be of interest to note that its incidence is different on the different sectors of the economy and the cost-price relationships have to be viewed from the angle of the agriculturists; comparative prosperity of the agriculturists is dependent on making the prices more remunerative and bringing the costs lower, so that the profits margin may be as wide as possible.

Countering the Cycle. Attention is invited, in this brief section, to the efforts which may be made for countering the cyclical and other disturbances in the agricultural sector. The seasonal variations, and the short-term fluctuations are rather difficult to prevent, for these are unexpected. The only thing that could be done is to adopt some ameliorative measures. In regard to the expected annual fluctuations, some precautionary measures could be adopted. The crops and the cyclical fluctuations may be prevented by the right remedies taken at the right moment. State policies are more effective than the efforts of the peasants, for these are only of an isolated nature and calculated to promote individual interests. Out of all types of fluctuations, the crop and the cyclical ones are the most injurious, and very costly in their incidence.

The "Cost" of Fluctuations. A brief account is needed of the "cost" of the fluctuations in terms of the economic loss and the hardship inflicted. In this connection, it may be stated, that they burden the peasant in the first instance because his resources get depleted. But this is not all, for the effects on the community are more deplorable still; it is put under heavy strain: the marginal firms may close down for want of raw materials, and unemployment both in the industrial and the agricultural sectors, would mount. Apart from this, the malady may also prove to be disastrous for the community, the various fluctuations, experienced in the agricultural sector, can make it unprofitable: that is why agriculture is usually starved of investment and capital, without which it can progress painfully slowly. And the costs are also in terms of upsetting the plans

for the improvement of the agricultural structure instead a deterioration sets in, and it means a retrogression in this sector, and then in other sectors of the economy

Immediate Steps Some immediate steps may be advised in this respect. As soon as it is noticed that the system is getting worse because of these fluctuations the state authorities should take upon themselves to adjust agricultural production to business, in order that price and income disturbances may be eliminated, as far as possible. The surplus farm production may be exported, especially in times of stress, in order to sustain the price level. If the cycle is being 'imported' via cheap agricultural imports it may be kept out with the imposition of stern trade and exchange control measures. The role that direct adjustment in production plays should not be underrated. Attention should be directed to correcting the basic maladjustments, which bring disaster in their train. The uneconomic exploitation of soil resources should be stopped for future conservation. Arrangements should be made to enable the peasant-stockists to carry as large a part of the produce as possible by the extension of storage facilities. And lastly, low production, (in case overproduction has precipitated the crisis) may be compensated by the means of subsidies to farmers who fall in line with suggested solutions, and with state policies.

Long Term Remedies But this may not be enough, for the long term remedies would be to eliminate the very causes of the trade cycle, and are more effective than the short period ones. They include enlargement of the size of the small family unit, which is most susceptible to fluctuations. By enlarging the size of the family units, the character of the agricultural undertaking is made less susceptible to agricultural fluctuations. Better farming practices should also be introduced so that the costs of cultivation progressively decline, thus enlarging the profits margin. And farm tenures may improve, for a large part of the produce and the return on the same, is taken away in the form of landlord charges, which must be cut down. And then the marketing charges should also be made to conform to the produce and its value, that is, they be made proportionate, for it is the stability of these marketing charges, that is responsible for the chaos prevalent in the agricultural sphere. And finally, there should be special improvement programmes for the depressed areas.

Co operation and Planning Attention may be drawn to the last item that special programmes be undertaken for the depressed areas. The twofold remedy is planning and co opera-

tion, with assistance from co-operative societies, the middleman's margin is eliminated, and the small and uneconomical character of the agriculture also countered. Planning (to be discussed in the last chapter 'State and Agriculture') is being increasingly adopted as the one remedy for all economic ailments, in agriculture as well as in industry. Special attention is paid to the needs of the agriculturist and the stage of his development: these considerations aid in eliminating wrong, misdirected and redundant steps in planning. It may be said that the system of planning need not be the same for all the sections of the economy, for the fact may be that the agricultural system may be different in different regions and the planning programmes adjusted accordingly.

The Inference. From the above discussion of the remedies of cyclical disturbances, it may be inferred that the problem has only been explained in its many respects. Space does not permit us to detail the various steps that may be taken to remedy the agricultural cycle. One thing that may be said here is that no hard and fast line may be drawn as between the long range and immediate steps by the planner and policy-maker. The remedies, adopted to counter the cycle, must refer to the strict policies to be followed in the agricultural sector. It may also be suggested that the problem has to be attacked from the angle of the economy as a whole, for no economic problems could be solved piecemeal. It is to be emphasized that agricultural policies and planning must be fitted in the economic framework.

Summary and Conclusions. The chapter under review has presented some important problems: it surveyed business fluctuations in theoretical framework from the point of view of the analyst, the agricultural crises are also a part of these disturbances. It was found that though the climatic explanation may be applicable to the agricultural sphere, the real explanation lies in the nature of the agricultural fluctuations. Next were studied the many types of fluctuations: these were the *short period*, the *seasonal*, the *annual*, the *crop* and the *cyclical fluctuations*. The seasonal variations were relevant from the point of view of demand and supply maladjustments and the crop and livestock production. The annual fluctuations could be interpreted in terms of the variations in yield; crop fluctuations could be viewed in the light of individual crops. The last could precipitate the long-range cycle in agriculture, with the result that the cyclical fluctuations originate from the same. In this connection, it was stated that the income aspect was the more important part of the analysis; trends of agricultural incomes:

impact of the population changes, behaviour of the real incomes, and effect of the improving technique, all these forces and factors were taken into consideration. Another section suggested long-term and immediate steps to improve agriculture and counter the cycle. In conclusion, it may be conceded that no single explanation could be given of agricultural fluctuations. It has to be admitted that the agricultural cycles may be mostly due to two important factors, firstly *comparative inelasticity* of the conditions of demand and supply in this sector, and secondly, the influence of the unpredictable forces responsible for agricultural production. Another point in this context is the perishability of agricultural produce, coupled with the high costs of its storage.

It may be pointed out that the cost structure in agricultural sphere is quite inelastic. This makes for the intensity of the cycle. But it is the real incomes, that count in agricultural prosperity and also the *exchange terms*, which determine the nature of real incomes. Thus the exchange terms of the agricultural production have to be improved. The most important immediate steps are outlined in a separate paragraph. The long-range remedies, too, are not to be discarded though they have to be of the nature of precautionary and rejuvenating measures only. But above all, the extension of co-operation is advised.

CHAPTER XXVII

FINANCING THE FARMERS

Introductory—The Need : classifications : Purpose and Use : Types of Securities : mortgages and Personal Credits : Sources and Effects : Farm Credit and the Rate of interest. Differential Financial Needs—Long Term Variations : Cyclical Changes. Price-Cost Relations : Imposition of Tenures : Individual Variations : Capital Accumulation in Agriculture. Lending Limits—Individual Loans : Banking Institutions : State Agencies : Bases of Existing Credit : Personal and Financial Limits : Securities and Guarantees : Ability to Repay : The Risk Factor. The Social Aspects—Short-term Loans : Institutional Credit : State Sources : Long-term Loans : Bankers and Brokers. Government Loans. Legal Aspects : The Social Import Long-Term Loans—Limits of Different Agencies. Problems of Appraisal : Adjustments and Adaptations. Repayment and Amortisation. The Problem of Long-term Lending. Short-Term and Intermediate Lending—General Observations. Kinds and Types. Procedure and Purpose. Intermediate Loans : Emergency Lending : Temporary Loans. The Loan Problem—Servicing of Loans. Collections and Carry-Overs. Administration of Loans. Low Income Farmers. Rehabilitation of Farmers. Lending to Tenants. Loan Plans ; The Inference. Marketing Finance—The Requirements : Earnings and Finances ; Practices and Loans. Costs and Links : Storage and Warehouse Finance. The Co-operative Finance—Credit Unions. Loan Associations ; Mortgage and Short-Term Financing the Co-operatives. Insurance Needs of the Farmers—Aims and Objectives ; Organisation and Operations ; The Forms of Insurance : Insurance Finance. Summary and Conclusions.

It is important to know what the various forms of finance and what the problems arising therefrom are, and how they influence the peasant and his calculation and long-term loans. All these find a place in this chapter as also the social and the legal aspects of loans. The problem is tackled from the point of view of the insurance needs of the peasant; farm insurance is now very much developed and is being introduced in agrarian economies. Loans for marketing of agricultural produce are also examined as also the rehabilitation loans. Also is surveyed the problem of co-operative credit. The problem is not important from the point of view of the peasant alone, but from the social and the administrative points of view, for the simple reason that the loans have a far-reaching effect on the social and economic body-politic.

Introductory. This section deals with the problem from the angle of farmers' needs and requirements. In the first instance, it discusses the needs of the peasant and then classifies the loans that the peasant negotiates, from several points of view. What are the different types of securities that he has to offer ? The mortgage and the personal credits are viewed,

and then the sources and the effects of the same on the peasant as well as his resources and means to pay. What the rate of interests would be in this light, is the next subject. This problem is concerned with the ways and means by which the peasants obtain the necessary funds for financing their agricultural needs, or for other purposes connected with their farming. This is an important subject of study, for it is a well-known fact that the loan needs of the agriculturists, are rather inelastic. The loans may be negotiated for productive purposes which tend to increase productivity of agriculture for unproductive purposes, or for wasteful purposes of litigation.

The Need. From all points of view, it appears that farm credit is essential to the well-being of agriculture. Without adequate equipment (and finance to buy the same with) peasants may only be wasting the land on which they work and also the resource they wish to exploit. A good credit system facilitates adjustment between those who have enough and to spare, and those who are starving for the lack of means. Not this alone, but a good financing system also provides the much-needed security and stability to the farming system. With the decline of landlord system and the rise of the peasant-ownership, the needs for financing of agriculture have become more pronounced than ever before. Landlords were men of means and could as well dispense with loans and borrowings, but the peasants have not the same long purse, with the result that they mostly lack the means with which to extend their agricultural system and tillage, to improve it and bring it to the up-to-date level. And then with the rise of the landless labour and the tenants, the plight of agriculturists is sad, hence the need for more money is felt. In the past, the financial considerations were not the only ones which weighed with the landlords; there were also the considerations of raising their status in the eyes of other people. The need for financing agriculture arises from the extinction of these landlords, and the emergence of the family farms instead. The family farmers do not have the same resources as the landlords, or as their farms may require. It is family finance on which most of the peasants have to depend, unless they borrow from other external sources. It is also a fact that the system of family farming and family financing often results in the maldistribution of the capital resources of the country, some farms being overcapitalised and the others being seriously under-capitalised. The capital resources of the individual peasants being limited by savings and inheritance, the limits of their finances are soon reached. Hence, borrowings are absolutely necessary and reserves would soon be exhausted.

Classification. The classification of the loans and the borrowings is determined by the needs of the peasant. The financing of agriculture, therefore, is the problem of financing the small-scale family business, offering peculiar risks and also limited financial risks. Loans advanced to agriculturists are *productive*, *non-productive* and *unproductive*. Productive loans are used for the purposes of investment into productive purpose, while the non-productive ones do not have such a purpose about them. The unproductive loans, have a wasteful purpose, they are for litigation or for being spent on the evils of drinking, etc. Loans may also be classified from another point of view; *specific* and *non-specific*, the former being those which are for a specific purpose, e.g. fencing, or sinking a well, while the non-specific ones do not have any special purpose in view, the money borrowed may be spent for any odd purpose; whatever. Then there is another classification: the loans for rehabilitation of farms, or loans for the improvement of agricultural procedures and operations, or loans for the purpose of house-building, or loans for any other such purpose. There are also loans for the purpose of marketing the agricultural produce; and these *marketing loans* are also significant from the social and the economic angle. Loans could be classified on the basis of the security offered: the *secured* and the *unsecured* loans; the *land mortgage loans* and the *produce mortgage loans*. Next classification is from the source standpoint; *co-operative* loans, *state* loans and *money-lenders'* loans. But the most important classification is from the point of view of the time factor; *short-term* loans, and the *intermediate term* loans, and the *long-term* loans. The short terms carry a low rate of interest, while the longer terms, a higher rate of interest: their incidence and burden on the farmer is high.

Purpose and Uses. The purpose and the use of loans negotiated by the farmer is of significance, in determining the rate of the interest at which the loan is negotiated. If the purpose is unproductive, the interest rate is high, but if productive it is low. The purpose may be non-productive, for example, a loan negotiated for the purpose of a marriage or a social ceremony, which the farmer must have to perform, and that which is a social obligation for him, as, for instance, a funeral arrangement. The purpose and the use are generally the same, but at times, the the purpose may differ from the use: for instance, the declared purpose may be productive, while the real use may be non-productive. This presents a complicated problem as when the loan is advanced to the illiterate peasant, who is hard-pressed for the same. It is responsible for the collapse of the solvent peasant. The purpose and the use must be the same, as a divergence in

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them may lead to bad debts, which are ultimately responsible for diverse agricultural evils attendant upon these loans if they are misused. In order to guard against the abuse of credit in the agricultural sector, the creditor must make sure that the purpose and the use are the same, or the abuse of the credit may come about. This is why the banks and the other specialised institutions lend in instalments, for they keep a watch on the way in which the money is spent by the borrower. This ensures identity of uses and purposes for which the loan is negotiated. In fact, some practical difficulties do arise out of this effort, because in the agricultural sector, the uses to which liquid money could be put are so many and so varied, that it is impossible to distinguish as between themselves. That is why such a watch is not possible on the usage to which the loan is put by the peasant. Another method of ensuring the identity of use and purpose is by making loans in the form of the equipment of some other specific form, so as to ensure that the farmer makes use of commodities or the equipment lent to him for the purpose for which it is required. Suffice it to observe that it is required that there be identity as between the usage and purposes.

Types of Securities In this connection, it may be well to enumerate the types of the securities which the peasant may have to offer in exchange for the loan he wants to negotiate. The security is generally land that he cultivates. Also there is personal credit, i.e., the security of the farmer himself. A loan is advanced by the lender only to those peasants whom he knows well, and whom he could trust to repay it. This is, therefore, a loan which is usually advanced on high rates of interest in the light of analysis in an earlier chapter "Distributive Aspects". Long term credit is used for the purpose of effecting improvements in the land. It is also productive credit, which is used by the peasant. Personal credits are negotiated for purposes, non productive and unproductive, usually, though this may not be regarded as the general rule. Personal loans are also negotiated for a purpose other than the declared one. Another type of security is property offered by a peasant. The loan against a collateral security carries a low rate of interest, though the rate of interest may (?) be higher than the one which is advanced against the security of land. Sometimes, security offered may be in the form of gold and bullion, in which case the rate of interest may be low, for this security is highly liquid, negotiable and trustworthy too. In times of falling land prices, the security is usually offered in the form of bullion and gold ornaments. With a rise in the personal incomes, the personal security may be welcomed by the lenders.

Mortgage and Personal Credits Mortgage credits are used for the purchase of land and buildings and also for making permanent

improvements in land and in the region where land values are high. Personal credits are used for other purposes, mainly for short terms; generally for the one specific purpose of satisfying personal needs and requirements, for the family. This form of credit is common. But allied to this is the fact that the collateral farms are also in use where the valuation of the farm property justifies these. Mortgage credit is usually supplied by specialised agencies and not by individual creditors. This distinction is to be borne in mind, for it would serve some useful purpose when dealing with more detailed and complicated analysis, but suffice it to point out that this form is essential to the successful pursuit of farming; but it requires some specialised and expert staff to assess the value of land, both in the present valuation and also prospectively speaking, an individual lender may not be so qualified or experienced as that. Personal credit is what they encourage.

Sources and Effects. In this connection, attention may be diverted to the sources of farm credit. The farmer has many sources to fall back on ; first and foremost is the individual who is usually the moneylender and the most important person in the village credit organisation. His resources are limited and he does not lend indiscriminately. And this source of credit provides long-term, intermediate and long-term credit. More common in the older communities, it is likely to be of a local character, and is confined to local communities, only. The next important source is the "merchant", who may lend on the security of the produce or the crops. The merchant is interested in buying farm produce, or in selling farm products. This source is, therefore, inclusive of such persons as the country merchants, the manufacturers and the processors, the livestock dealers and breeders, commission agents and the grain dealers and the produce dealers. Most loans advanced are for the short-run and the intermediate terms. The purpose of the loans is also specific; usually, they are advanced for the purpose of buying farm machinery, or for building a barn. In the new colonised communities, this source is of great importance. Next source is connected with banking institutions, the local banks : they are confined to the secured types of loans, for they could not give such loans as may be unsecured. The loans may be usually for short and intermediate terms. Insurance companies advance loans in the forms of real estate mortgages, and so also the savings banks, which in England have invested a large part of their savings in the real estate and the farm enterprises. But apart from their operation in that particular region, these banks have a limited and narrow range of operation. Next source of finance is specialised agencies like finance companies, land banks, and state agencies. Finance companies give money, or equipment on hire-purchase basis while land banks give loans on the basis

of land securities, they make the land mortgage loans. State agencies are daily becoming more important for the simple reason that they are manipulating more in the field of the rural finance actively. In India, the *taccavi* loans are given by the state to the peasants, for the purpose of overcoming an emergency. In the next place are the co-operative agencies, the co-operative credit societies are dealt with in a separate section. This description of the various loans agencies has to be borne in mind in order to understand things.

Farm Credit and Rate of Interest Interest is payment for the use of credit, the borrowed money. And the rates of the interest reflect the demand for capital and its supply, while a rate may be heightened by the fact of loans. Therefore, the nature and the purpose of farm credit also determines, to a great extent, the rate of interest, which the peasant is to pay. A credit system, which lowers the rate of interest also increases the value of the farm credit, is influenced by the rate of interest. At a lower interest rate the utilisation of loans is more liberal, while at a higher interest rate, the utilisation would be restricted. Whether it is the restriction of farm credit, or its facile issue, that is better from this new point is yet undecided. It could only be said that facile credit may be misused by the illiterate peasant, who may waste away money borrowed on such easy and facile terms, hence the issue of the facile credit may harm those communities where the number of illiterate and unprogressive peasants predominate over others. Alternatively, rate of interest could also be said to be determined, not so much by the forces of demand and supply as by those which are of institutional nature.

Differential Financial Needs Financial needs determine to a great extent the range of the credit in the community. There may be differing needs of the farmers, according to long term variations in the agricultural sphere, of cyclical changes in the farming sphere, and price-cost relations according to the individuals, or the range of the accumulation in the hands of the different peasants or different institutions. All these differing needs accord to above-mentioned fluctuations and cyclical disturbances in the modes of farming. This analysis, mainly descriptive in its content, is also analytical in certain respects. The needs vary according to the individuals and their farms and also their own capacity to borrow. Also, it may be stated that the generalisations made in this section, would not be much applicable, as variations in individual needs are pronounced.

Long-Term Variations Long-term changes may be in respect of prices. These changes influence the rate of the interest and also the extension of credit. Prices, expected to rise, would mean

that the peasant likes to invest more in the present so as to benefit to the fullest by the prospective rise of prices, by offering both a higher quantity of the produce as also a better quality of the same. Thus with the prospects of prices falling, the present investments may also decline and the peasant may not be enthused by the trend and may not like to risk increasing his liabilities at present, for in the future he may not be able to repay the same, and therefore, to mount his current obligations. In case, he expects price and production trends to be on the incline, he need not be afraid of the repayment which he would have to make, for then the price-cost margin may be high, and the repayment easier, too. In this context the borrowing needs of the peasantry vary with the long-term changes expected in the sphere of the peasant's activities, and within the range of his production. But the peasant may not be so calculating as that, and it may be lender who may be more calculating from this point of view, and take into consideration, the price trends, so that he does not lend money, and run the risk of making the loan a bad debt.

Cyclical Changes. Attention may also be focussed on cyclical changes, which may as well characterise agricultural production. In this connection may be distinguished the productive and the unproductive trends in farming, for the unproductive need of the peasant may as well remain inelastic for the peasant and thus the subsistence and the family farmer may be unable to meet his both ends, and therefore he may require more money for unproductive purposes. The total requirement and the total amount that he would require, would depend upon the ratio which the unproductive debts bear to the productive ones. If the productive debts bear a large ratio to the total debts (to be negotiated) the peasant would require more money in the times of boom; while if the requirements in respect of unproductive debts are heavy, the needs of the farmer in depression may be as inelastic as before, and the needs in the times of the boom, not so high, and he would not be much in need of the loans and borrowings. Thus we come to a conflicting conclusion in this matter, in regard to the proportions of debts. In India, this has been true, for in times, of recent post-war boom, the credit needs of the peasants declined, for the simple reason that the Indian farmer is always in need of unproductive debts and his demand for productive debts very elastic. Another aspect of the question to be noticed is that most critical phase is when the price trends and the cyclical changes occur, for the time when these changes occur is the most opportune one to the peasants to discharge their obligations. Then the volume of the non-agricultural products influencing economic conditions in the country has also to be taken into

account, for non-agricultural production affects the volume of employment which affects the money incomes (of the workers) it is thus indirectly that cyclical changes in the non agricultural sector affect incomes of the peasants. Farmers may not be able to adjust to the declining incomes in the industrial sector, or they may fail to respond to business fluctuations and their demand for credit may be consequential on the behaviour of prices. The decline in the demand from the industrial sector in a depression, may depress agricultural price, with the result that the demand for the productive credit shows a decline, but the demand for the unproductive credit registers no variations. It may also be pointed out that the agricultural cycle in respect of individual commodities, also influences the credit needs of the peasant, and the analysis is of a similar nature.

Price-Cost Changes Prices of various goods and products do not move together, and with their differing movements, the price-cost range is also affected accordingly. The relationship as between prices and costs has to be assessed for it is these relationships that determine the profit. In the periods of rising prices the profit margin increases, while in the period of declining prices the profit margin is considerably reduced. From the standpoint of farm credit, it may be wise to avoid undertaking heavy obligation in times of temporary high prices on the farm, as is in times of declining prices. The price-cost relations may undergo cyclical changes, the changing technique may also depress the costs and thus increase the profit margin, with the result that the demand for productive credits may intensify, for the purpose of installing equipment in pursuance of a policy of modernisation of farm productions. In the initial stages, the higher costs of the installation of the equipment (and this equipment is also rather costly) require the costs of farming to be raised necessitating the negotiation of higher loans. This the peasant does very willingly for his expectation is that he could repay the debts soon, as the profit margin is wide. In the matter of unproductive debts, the demand for which is of an inelastic nature, these considerations do not weigh much, for the reason is, that the profit margin being reduced, demand rises for money to be unproductively spent, and the peasant wants more and more money for the same purpose. Thus the price-cost relation is of some significance for the needs of the peasant for both types of debts, the productive and the unproductive ones. But the demand may not be solely determined by the range of the price-cost difference and the profit margin, as other *personal* considerations, also weigh with the peasant and these considerations are more important to the peasant than any other considerations. Also price-cost differentials may not be the same.

The Tenure Differences. The credit needs of the landlord are not the same as those of the peasant occupier, the tenant, or the landless labourer. There are the croppers who do not supply anything beyond the labour they put in; then there are the tenants, who work on some contract basis or furnish part of the operating capital; the part owners, who are owners of a part of the land they till; and the peasant owners, who occupy, till and own the land, which they cultivate. It may also be pointed out that the landlord does not need any capital for even if he is a participating and active landlord, he has sufficient resources for investment in the farm. The advances made to the landlord would be on a different basis, for there are the personal and the collateral securities, which he could offer and also has lending agencies open to him. The financial requirements of the operator would obviously vary with the group in which he falls. Of course there are the border line cases, which could not be classified thus; that depends on the nature of the contract, which is made between the tenant and the landowner, for the landlord may be agreeable to supply most of the equipment, and in that case, he would not need much money for the purpose of production on the farm. It may be pointed out that financial requirements vary according to the security that the operator has to offer : in the case of the landlord the security is sufficiently large to justify large needs, while at the other extreme, the lack of the security may be responsible for the restriction of credit. Thus the landless labourer could not pitch his needs far high, while the tenant, may also not be able to do the same. It has to be understood that the position is not so easy to analyse, in accurate details, for the point is that the variations arising out of land tenures, could only be of vague interest to the needs for capital and credit requirements of different classes of tenants. In a fluid state (as for instance, during the abolition of zamindari in this country), the credit needs of the erstwhile tenants would expand for the simple and understandable reason that the peasant has to start on a venture into which he has been only working at the directions of the landlord. Thus the stage at which a certain tenure is operative determines the need for credit.

Individual Variations. The most important determinant of credit needs is individual variations on the part of borrowers. With certain peasants and borrowers the need for credit may be of an elastic nature. Individual resources determine the credit-worthiness of the peasant, for as Mr. Darling contended credit rises with a rise in the creditworthiness of the peasant. Thus it may be that the spurt of prosperity may end in making the peasant more indebted than before. This is not a desirable state of affairs. If financial and the other resources of the peasant are low, his needs

for credit would be very high and he would go in for a much higher loan than otherwise, he would think in terms of the money that he needs. Attention may also be drawn to the fact that the ratio of the productive to the unproductive debt also determines his credit needs. If the peasant is addicted to unproductive borrowings, and his expenditure is of the unproductive and wasteful nature, he would not be able to adjust his borrowing needs to the fluctuating fortunes of his farm, but on the other hand, productive borrowing forms a large part of the farmer's total borrowings, the demand for the same would be elastic and also adjustable to his income. Another thing to be considered is the farmer's outlook, if his outlook is not progressive, he is tied to unproductive debts and is usually in debt for he is stuck up in the vicious circle of accumulating debts, but if the outlook is progressive the peasant would not undergo such liabilities as might involve him in unproductive debts, but such liabilities as would be repayable and bring about a return in the form of increased production. An ambitious peasant would like to improve the standards of living of his own self and the family, and to this end he might be inclined to exploit the facile credit and thus have an inelastic need for credit open to him. This is another variant.

Capital Accumulation Capital accumulation is attended with certain hazards in rural areas. If and when the village has big landlords, the process of capital accumulation results in loan being locally available. The readiness of the professional lender, for whom money had no other use except to be lent, means that the capital needs of the peasant also extend unproductive ends, and are thus of an inelastic nature. In this regard, the process seems to have been reversed recently because of the strict agrarian legislation that is on the anvil for some time. This legislation has tended to remove inequalities of wealth by heavily taxing landlords and other persons who had accumulated capital on an extensive and large scale. Consequently, the needs of the peasants have also become quite elastic and the element of the unproductive debts has been on the decline. This is not an unhealthy sign, for the fact is that with the restriction of farm credit, or only from the non personal and the institutional sources, the unproductive element has tended to be eliminated. Another point relates to the accumulation of capital on the part of the co-operative credit societies, and this source too, is responsible for weeding out unproductive needs on the part of the peasant. The accumulation of capital on the part of the individual peasants depends on the profit margin, with a higher profit margin lowered, the accumulation is slowed, but this depends on individual tastes and inclinations of peasants.

Lending Limits It may be pertinent to enquire into the lend-

ing limits in respect of various borrowers. These are limits to which the individuals and the institutions may lend to peasants. This is a vague statement and one which could be applied to all, who specialise in the business of lending. They would lend only when they think that is safe and within limits. The principle is formulated in the light of experience, gained in lending by various institutions. In the first instance, the lending limits are determined by investing prospects in respect of certain institutions and their circumstances. The peasant is the residual borrower, except in the case of the money-lender and the local institutions, like the co-operative credit societies, who do not lend to anybody else but to him.

Individual Lenders. For individuals, the lending limits are determined by resources that the individual has and the financial requirements of his business. The business of the moneylender is that of lending; hence the amount of money available for lending purposes is the total sum he may have. In his case, the limitation is imposed by his resources, earmarked for this purpose. It was because of this fact that the moneylender in the Indian villages, could lend without the same limits as were imposed on the co-operative society, with which he competed successfully. Two considerations may be borne in mind when talking of the limits to which the individual lenders could lend. In the case of the secured loans the limits are determined by the *amount* and the *nature* of the security, but it is usually the unsecured loans that the individual lenders extend, hence the restriction imposed by the nature of the security is not applicable in this case.

Banking Institutions. In the case of banking institutions lending limits are imposed by certain other considerations. In the *first* instance, their credit is limited by the amount of resources, which in turn are determined by the amount of their deposits which usually depend on the surplus funds of the community. Another limitation is imposed by its lending policy which is governed to a great extent by the central banking institutions and the general economic climate in the country. The funds available for the purpose of lending are determined by the size of cash reserves deemed necessary for banking purposes. Another limit is set by the amount of investment made in a certain place or an industry; this is more or less constant for banking institutions, still, the extent to which it has invested money in the above manner would detract from the amount available for the purposes of lending to peasants, for as pointed out, the peasant is the residual-borrower, and the institutions give preference to other borrowers rather than to them. In this context, it may be pointed out that the residual funds, available for the purpose of lending to peasantry are determined by the amounts invested in securities and

bonds And in the first instance, the limit is to be determined by the availabilities of funds that it could have at its disposal, and in this connection, it may be suggested that the total amount may as well be determined by the amounts that it could borrow from other institutions, too In regard to the amounts to be lent locally, the two divisions would be the mortgages and the short-terms This means that the mortgages could only be made out of funds which are not subject to current withdrawals The amount it could lend to the local peasantry, for the mortgages, especially, is determined by the nature of the deposits that the banks receive, if they have a high proportion of the funds which are in the nature of fixed deposits, they could lend a larger amount in the form of mortgages, and if the amounts received in the form of deposits are of current nature, the amounts available for the mortgage investments are lower If the amounts received by the bank are of the predominantly time deposits, the amount available for the short lending are proportionately increased

Credit Corporations Credit corporations depend on deposits for the funds from the public They would only lend within safe limits, and their loans are of the nature of the secured loans They have a lending limit, which they would not cross ordinarily They lend on the security of crops and, generally, for the purpose of marketing Most of their loans may be of the nature of the current loans, and not mortgage ones as their advances are out of the borrowing they make from the public But if they advance for long term, this is in the forms of credit accounts, or in the form of instalments, so that they could keep an eye on how the money is being spent The cost of their loans depends on the type of security offered, and also on the rate on which the corporations themselves borrow money from the public In fact, credit corporations are not an important source of credit in villages

Land Banks The land banks are another source of rural credit These banks give credit on the basis of land as security Their limits may be fixed by law, and the banks cannot cross the limit But these banks may lend within limits imposed by the availability of lands as security which the farmer is willing to offer Lending limits are determined, indirectly by the nature of the land, for the loan may be advanced on its evaluation carried out, by experts It is a lending institution for long-term credit and for the purpose of making long term improvements in land Hence the readiness of the bank, notwithstanding, the amount to be lent, would be dependent on the type of the peasantry and the outlook they have towards the problems of land development The inference is that in the case of pure tenants, who have no interest in the permanent developments on land, the amounts which they borrow for the purpose are small, on the other hand, the

amounts which the peasants require for the same purpose, are higher, for they would like to make greater investments in their banks. But banks have usually no deposit liability for they lend to the members and out of the funds and contributions; they are usually co-operative institutions. And to the extent they lend out of the members' contributions to the members, they have the limit imposed upon them by these funds.

State Agencies. In this case, the amount to be lent is not limited, for the fact is that the state could lend any amount in consistence with its budgetary outlook. If the budget permits, it can make larger loans to agriculturists. It is in few countries that the farm credit has been nationalised, and even in these countries, the budgetary limits could not be crossed: these limits are imposed by the allocations of money between the different heads of expenditure; priorities and policies. State lends for specific purposes. Lending may be direct as well as indirect; *direct*, when in the form of advances made to peasants, for the purpose of making improvements or rehabilitating themselves and their farming, or tiding over emergencies; *indirect* when for the purpose of farm relief, and of remissions of the land taxes and the water rates, for the time being, or temporarily, or the suspension of the same, for a certain period. It all depends on the gravity of the crisis that is sought to be tidied over and the general policy of the State, with reference to the system of agriculture.

Bases of the Existing Credit. Analytically, the existing credit structure is based on the fact that the peasant is a residual borrower, except in the case of local lenders, who have no other avenues for their surplus money, and could conveniently invest in the local peasantry, whom they have known for long periods, and whose repaying capacity they could adjudge. In this case, the loans may be unsecured and personal, but in all other cases, they are mostly secured, collateral or mortgage ones. All these lending institutions use their own invested capital in order to attract funds from others, with which to increase their earning assets, the state and the semi-state institutions excepted. All financial institutions maintain their own stability intact, and would not like to lend beyond limits, imposed upon them by their own experience. The stability of the institutions requires that the invested capital be able to bear the shocks of bad debts and the other emergencies. Their earnings are influenced by two things: *firstly* their ability to maintain the high ratio as between the funds, the liabilities and the assets; and *secondly* the profitability of the investment and the security of the loans made; the higher the ratios of the loans to the invested capital, the more profitable the lending.

Personal and Financial Limits The lender is interested in making a loan, which is repayable to him without any difficulty, and in having a good rate of return on the investment. If possible, the loan should have some degree of liquidity about it so that in times of stress the loan could be easily collected. Similarly, the borrower prefers such borrowings as could be negotiated in any emergency, and at a reasonable costs. Of course, the facilities, in regard to repayment, should be the most favourable to him. These conditions are ideal, but hardly found in actual practice. Still, they provide the basis of loans and borrowings. Reduced of bare elements, they are twofold, the *personal* and the *financial limits* and the *ability to repay*. It may be pointed out that the personal reputation of a borrower is an important factor to be taken into consideration by a lender when making a loan. What is his reputation for repaying debts, he incurs? And what is his method of repayment? Such reputation is derived from his past records in this respect. His present performance is a basis for future lending. The financial habits of the borrower are taken into account. Of course, the past record may be with reference to the financial status of the borrower, which is changing with the changing fortunes of the farming business. The financial basis is more important than the personal one. From the point of view of the lender, the financial assessment must take into account the net worth of the accounts position, that is, the difference between the assets and the debits which the borrower is under. The position should be positively on the side of the assets, that is the net worth should be positive and not negative. Similarly, the current assets and liabilities have to be taken into account, and the present net worth. The financial condition is assessed by the general nature of the indebtedness of the borrower, the character of the real estate, including land which the borrower has. It may be repeated that the financial basis is the most trustworthy.

Securities and Guarantees Specific securities influence the extending of loans to the peasants. As pointed out earlier the collateral securities are taken into account they represent tangible property or the pledge of some bonds or the receipts of the grain or the crop in the warehouse. All these securities provide the financial basis of loans. Specific securities are taken into account when making loans, especially the short terms. In long term loans the collaterals take the form of real estate mortgage. The reasons for accepting collaterals are quite self evident, peasant gets the loan on easy term while providing the lender with a tangible security, convertible into cash, as and when the loan becomes a bad debt. Secured loans have the disadvantage of being expensive they require more formalities on the part of both the parties, for the collateral has to be pledged to the lender,

this is a complicated procedure. But there is the advantage of having a security which may be self-liquidating. But it must be remembered that all farming operations could not be financed on the basis of collaterals alone; *firstly* because farmers, especially the poorer sorts and the tenants, may be lacking in such a security; *secondly* because it may be difficult to offer a collateral in the form of the crops when the harvesting and the marketing seasons are over; *thirdly* because, the farmer may have already pledged his property for a long, term loan; *fourthly* because, the security offered to the lender may not be acceptable to him, and *lastly* because there may be legal difficulties in the pledging of the security offered. Tightening the loans is the consequence, with the inevitable rise in the rates of interest. There is the method of guarantees, by others: endorsement may be made by the co-peasants on the loans of the peasant; there endorsements make the endorser liable for the debts of the borrower. This sort of endorsement may be required by a banking institution, a financial house, or even an individual lender. The endorser is person of known sound finance and is usually a landlord.

Ability to Repay. If the lender has the least suspicion that the peasant-borrower is unable to repay the loans advanced to him, he would not go in for the transaction. He would rather not lend, than see his debt becoming bad. It is, therefore, another limit and the most important one, both for the borrower and the lender, as a wise borrower should not borrow if his ability to repay is poor. In this connection, it may be pointed out that it is difficult to calculate the ability to repay or to accurately assess it. With intelligent borrowers and lenders, this fact is always present and limits borrowing. Only in exceptional cases, when the collateral is sound and the other circumstances of making good the ability to repay may be ignored and the other factors supersede this. But this case is exceptional and mostly the ability to repay is a potent circumstances for limiting loans. Ability to repay may also be determined by net income, after the operating and the living expenses are met. It influences such other factors, as the productivity of the peasant and the farm, the location and the marketability of the produce, *i. e.*, the net income from the farm, the nature of crops and the farm property. In this connection, a calculating lender may also consider the stage in which farming is situated, for that also effects the ability to repay. If the price trend is to the downward the best intention of the borrower may not enable him to make the payment. And finally, if the cost of living is out of proportion with the current incomes of the family, the ability to pay could not

remain at a high level, even when the peasant had started off well. The ability to repay is also determined by the financial and psychological habits of the peasant. The final difficulty in getting the loan repaid, may be minimised if the prospective lender looks at the ability to repay in respect of the future trends of the above factors. Ability to repay is calculated in respect of current loans, and long-term loans. In regard to the short terms it is the current incomes, which may be taken into account, while in the long terms, it is the financial soundness, coupled with the above factors that may be considered. Also, the profit margin, both at the present moment and prospectively, influences the ability to repay the loans. Still another factor is the sale value of the land, important in long run mortgage loans, and not the current one. To sum up, the ability to repay is based on several considerations.

The Risk Factor Farming is a hazardous job, attendant with several risks. Hence this aspect of the problem also invites the attention of the peasant and the lender. The risk factor is potent in determining the rate of interest, for as pointed out, in an earlier chapter the rate of interest varies with the element of risk if the loan is being invested in an undertaking is an experiment of a hazard of risk, attendant upon the loan, in consequence, that a borrower gets money only while a lender may think many times factor determines the range of undertaking it is a matter of common observation cultural undertakings are usually starved could make them sound. The limits to the agricultural sector are determined most important factors, which the ability to repay the loan (and repayment of the loan) and the risk factor.

Social Aspects This section examines both the short term and the long term have the rural social aspects. A study for without that this study is, are the sources of short-term loans? A comparison of the same, as far as the social the long-term capital move into the what implications? And with what wise use of credit? And what peasant, and more important approach in this section is mainly

Short Term Loan Among the rural, the individual lenders are easily

with the institutions, following next. There are loan agencies and credit corporations. Broadly speaking, loan capital tends to accumulate in the community, when local resources are well developed. When income is surplus, when saving results from the thriftiness of the people, when rising prices persist, or when there are institutions encouraging savings and also opportunities for saving capital. All these factors may act simultaneously, or in isolation. To the extent they act in concert, the accumulated capital is available for the purposes of investment and lending. In this connection may also be considered the demand for short-term loans and the conditions therefor. In the *first* instance, the demand arose out of the needs of the new colonies or the undeveloped areas; the Punjab Canal Colonies did afford such an instance. Also short-term credits may be required in those areas, where the income of the peasant is depleted or meagre. In the case of spendthrift people too, the keen demand for short-terms may raise interest rates. Demand usually intensifies in periods of falling prices, for then the profit margin shrinks: it may not be even positive; In war-devastated economies, the demand for the rehabilitation loans may rise, and take the complexion of the short-term loans. Also in those countries where wealth is hidden or hoarded with ornaments, the demand for the short-term capital is intense, as the peasants, though having wealth in the form of ornaments, hidden from the public gaze, may not like to convert the same into cash but instead depend on the creditors for their cash requirements. In these places where capital earns a higher rate of return elsewhere than in agricultural loans, the demand for the loans is high and so is the rate of interest. Similarly, where the risks of lending are great and the process cumbersome, the rate of interest is high.

Institutional Credit. Institutional credit refers to credit supplied from institutional sources. In this respect, there are the co-operative credit institutions, and the banks. The provision of credit institutions is beneficial to the peasant, for they would not lend for unproductive and wasteful purposes. Banking institutions, where they have spread to rural areas, lend on the basis of the securities offered. Also credit and loan companies, do not lend for unproductive purposes. The social aspects of institutional credit are noteworthy. Banking institutions may be of *branch*, *chain*, or *independent* types. The first type tend to curtail loans, for the sanction of the head or the central office has to be received, before the loans could be made, and the headquarters being unaware of local conditions, may not sanction loan liberally with the consequent shrinkage of credit. The chain banking system may be a little better, in that the units have greater surpluses than branches, for they

have autonomy, in regard to loans and investment they make, the central office has only supervisory functions. Independent banks could be more effective in extending credit not having to get any sanction from any headquarters. Well organised co-operatives, too, may extend credit facilities to rural areas. Their social aspects are noteworthy, for they make loan with the sanction of their members, and the liability of the members being unlimited, they have a sense of responsibility, and extend credit only to the deserving. Confidence is also inspired among them when they are able to deal with their own problems without anybody to restrict their activities, hence the advantages of such a system are manifold and they may be summed up by pointing to its ability to provide the best form of short term credit on a mutual basis. Then there are the *specialised* and the *loan agencies*, but only for productive credit. These agencies are either specialised (which extend capital for a specific purpose) or there are sales corporations (selling things to peasants on easy terms and thus benefiting him in respect of good equipment and implements) or just such agencies, as extend credit on some good security or guarantee on behalf of the peasant. But the role of these agencies is much restricted, for obvious reasons. The most important type of the institutional credit is that advanced by the co-operatives, who may have unproductive loans as well.

State Sources In this category may be classed all those sources of loans, which are official or semi official. This means that state agencies and the state banking are included in this category. In the former, the loans may be advanced on the recommendations or advice of local officials, and also in the event of disasters, which may befall the peasants. They provide such credit, as other agencies could not and would not. In times of distress, when the peasant has no security to offer, or not even a guarantor to stand by, it is the state that comes to his rescue by advancing to him such amounts of money as he may require and as may also rehabilitate him and put him on an even keel. Thus the state is an important source of credit, in that credit is provided as and when required by the peasant. It may also be mentioned that the central banking organisation could extend its branches and activities into the remotest and the most far-flung corners, with the result that the extension of the credit is much facilitated to these areas. In this respect the central banking institutions could take a pioneer and a bold step, in providing credit to the peasantry on what may have so far been regarded a weak form of security. Provision of credit is also possible by such devices as agricultural paper, or the issue of credit on the basis of standing crops. Thus state agencies are the most potent factor in chalking out new lines

of credit, and also provide credit in a manner, so far undreamt of, and at a time, when other agencies fail. In respect of the social aspects, it may be stated, that the agencies inspire confidence by the extension of the much-needed credit to the peasantry, even to the backward areas. Thus their sources are indispensable to backward countries. The problem of rural credit in these economies could only be solved by the extension of the credit.

Long-term Loans. In respect of long-term loans, the agencies are many and various : the bankers and the brokers and the insurance companies, the banks and the state agencies. Most of the short-term finances are provided from within the rural communities, but the long-term finance, mainly by the outside agencies. The social aspects of long-term loan are not a little different from that of short-term loans, for the loans which are provided by co-operative and other agencies for the provision of short-term loans are mostly located within the village. The long-term loans have often to be provided by agencies mainly outside the village : the farm mortgages meet the demand of such people as want to make improvements in the farms ; the loans also meet the requirement of those lenders who are able to invest funds on a long-term basis, and have the willingness to do so. Long-term long loans are also not easily liquid for they could not, readily, be converted into cash. These loans run for years, and are meant to improve the complexion of the farming and agriculture. In this case, a small part of the loan is also advanced by institutions, such as insurance companies, which have large funds awaiting investment ; and the land banks. Most of the long-term loans are *secured and covered*, or are against mortgages, as it is difficult to make long-term loans on the security of individuals who may not remain in the same circumstances, nor be able to survive the period of repayment. Financing by the insurance companies, is of a limited nature, for they have to work through local agencies ; and there may be restrictions on their investments. Hence their area of operation is restricted to the more stable regions, where agricultural incomes have been more or less on even keel. This is advantageous in that the insurance companies' finance is instrumental in bringing the problem of long-term finance closer to his view. But the defect is that this type of the financial assistance is selective and restricted. Land banks, if run on the mutual and co-operative basis, may be immensely useful, for they widen the social horizons of the peasant and inspire him with a certain amount of confidence. Hence the co-operative system of long-term finance is a potent factor in making things better and

the future for the peasant brilliant, but if only it succeeds. The amount of frustration it causes, if bad debts accumulate, would also be equally damaging to co-operatives. Most land banks may be state banks and in this regard may partake of the good and evil attendant upon that type.

Bankers and Brokers They also provide long term finance, though more or less restricted in scope. Many individuals, interested in banking in rural communities, may lend money on long terms. Such individuals have connections in rural communities as middlemen and dealers, and rise to the status of bankers by dint of hard work. These people have also complete and intimate knowledge of these communities they work in, still they require some securities for advancing long-term finance. Some individual bankers may borrow money on their own and invest the same in the form of the long term loans among peasants. They would usually have land as security, in the event of the peasant being unable to pay the amount, they may grab this land to add it to their estates. To this lending agency the peasant would revert only in the last instance, he has to pay high rates of interest and also pledge larger amounts of land or collaterals. The growth of institutional credit has tended to minimise the importance of this source. Still, it is of importance in the backward and the embryonic economies, because of the lack of development a good outlook on the part of the peasant and the lack of the growth of the other agencies for rural credit there. Sometimes the individual lenders, bankers and brokers combine together with a view to lending on a larger scale. And if the country bankers are to survive, they must adjust to the times. Long term loans are becoming more popular with individual bankers and brokers in the countryside. It is possible that malpractices on their part may spell the fate of the peasant proprietors, and reduce them to the status of tenants, for the security they accept is land, which through the inability of the peasants to honour their liabilities, very likely passes into the hands of the bankers and the brokers. Thus the financing of long term loans by the individual bankers and brokers often means an increase of tenancy. But, this source of finance is probably an indispensable one. The social aspects are long range ones of the increase of tenancy, and the consequential straining of the relations in village communities.

Government Loans The loans that are advanced by the state, in this particular category, may be rehabilitation loans, or specific loans for development purpose. These may be dispersed through the agencies of the local government, which could visualise things in better and closer perspective. Advanced on nomir

nal interest charges, they are cheap. States are now making more long-term loans, being better equipped both by experience and training to make these loans or deal in them. It is more easily possible for the state to recover loans in very long instalments and at very easy terms, too. The loans advanced by the state may be in the form of machines and tractors which the peasant may need, and which the peasant may be unable to buy, left to himself. The scope of these long-range loans is widening, with advantage to the peasant. But, the state agencies must be able to distinguish as between the purposes for which a loan is secured by the peasant; an unproductive purpose makes it impossible for him to repay, except in very low instalments. The point that deserves to be emphasised is that the provision of state loans (provided the machinery for the dispersal of the same is not infected by the red-tape) may considerably help the peasant as also improve agriculture. Usually, the state loans are hard to get as the procedure (for the red-tape to operate) is not only cumbersome, but also is in actual practice, rather protracted. And this is a vital point in the reorganisation of credit facilities, for the state loans have neither any social evils nor result in straining social relations in village communities.

Legal Aspects. No social survey could be complete without a reference to the legal aspects of the problems they determine social relations as between debtors and creditors. Borrowing and lending creates an obligation in the form of contracts between the lender and the borrower. Definite legal procedure is followed and the transactions go through all the formalities sanctioned by law. And money lending would not be practised, if the ability to recover the debt is weak and not enforceable legally. The nature of the formalities may vary from country to country and also from individual to individual, as individual status has to be taken into consideration, when making loans. Some rules may be made in this connection: this is the crux of the problem from the legal point of view. Legal documents must contain evidence of debt, in the form of a promissory note or just a book entry. Another form is the judgment notes, which is a legal procedure for the enforcement of the contract. The use of judgment note simplifies the procedure in connection with the repayment of debt, possibly, other type of notes to be executed; the mortgage notes, the notes in connection with unsecured loans, and the conditional notes, and the collateral notes. In addition to these, there may also be the endorsements and the guarantees, for which the endorser and the guarantor make themselves liable for the amounts of the loans, if not repaid by the borrower. Mortgages may be real

estate ones, the chattel types (relating to the livestock and the property) and the collaterals. There may also be the conditional sales contracts, which make it easier to get possession of the property, the persons who sign these contracts have poorer credits. Legal practices may involve the right to redeem, which means that within a specified time, the debtor could get back the pledged land and the title transferred to himself. Another device is the *waveer*, which is secured from other parties who may have a lien on the property of the debtor. Other documents may facilitate the collection of the produce to the creditor in lieu of the debt due to be paid. There may also be documents that facilitate the purchase with borrowed funds, the letters of credit and the bill of sale drafts are most commonly used. The letter of credit authorises the borrower to draw on the lender drafts to a specified amount for the purchase of certain machinery. The bill of sale draft is a combined draft and bill of sale which gives the title of the purchased material to the lender, thus it offers security. The legal phases of credit may be summarised as being only regulatory of the credit procedure, but it is essential for the procedure to be correct and to be legally perfect.

The Social Import It may be stated, in summing up this section, that the social implications of the short term and the long term loans are of paramount and superlative importance both from the point of view of the debtor and the creditor, but especially from the point of view of the society. It may be observed that the state sources of the long and the short-term credits though the most important, are the least disturbing factor from the social viewpoints. And lastly, the social aspect is closely tied to the legal aspects, which have been viewed above.

Long-term Loans Attention may now be devoted to the long-term loans in details. What distinguishes the long term loans from the short terms? And what is the role they play in the problems of rural areas? What are the different agencies which play a vital role in the loans, granted on a long term basis? All these questions receive our attention in this section, which makes a detailed description and analysis of long-term loans. A probe into the problem of repayment and amortisation of loans, is made for that is a difficult problem for the borrower and the lender. The more important problems of appraisal and adaptation to the ability of the peasant to repay are also considered in the section from the point of view of the peasant and his community.

The Limits Suffice it to point out here that the limits of

various agencies (for the long-term loans) are determined, *firstly* by the amount of the funds they have to invest in the long-terms, and *secondly* by the lending policy of the agency in question. One guiding consideration is the margin of safety in the value of the collateral; especially in the matter of interest payments; some margin is allowed for the repayment of the principal amount to be paid by him. Land values are capitalised so that the loan limits may not be crossed. Probably, the loan limits would not exceed about 75% of the capitalised value of land, or other such securities, thus keeping a fair margin on loans so that in the event of a decline of land prices, the safety margin is not crossed. From the point of sound credit, the lower the limit, the better it would be and the greater the soundness of the whole proposition. Still another limit is acreage: this is defective as no generalisations could be made on this basis. Other limits could be from the productivity point of view, *e. g.* that of land; but the most reliable limit is imposed by the price of land, or the collateral, making an allowance for its deterioration over the period of the loan and till repayment. Long-term loans could be used only for the purposes of the development of land and the improvements are made over a long period so that the peasant may be able to pay only in the long range. The hire-purchase form of transactions involve long-term long loans, for the price of the equipment may be paid only in the long run and not in the short period. Thus the utility of long-term loans is confined to the improvement made in the farming system, *e. g.*, raising the tenant to the status of the peasant occupier, or buying expensive types of the farm machinery, or any other allied purpose. Thus the general scope of long-term loans is for improving farms.

Problem of Appraisal. Estimating the value of a certain piece of property, which may be offered as security for a loan, is an important problem, for without a proper and correct appraisal a creditor may not be able to make loans which it may be rendered more difficult for the borrower to deal with. A loan may suffer from a high rate of interest, if a proper appraisal has not been made. Two general bases of the appraisal of loans exist: *the comparative sale value* and *the income analysis*. In regard to the first, some points were discussed in the chapter on land usage; still it may be said, in passing, that the appraisal of sale value requires a good knowledge of prices at which farm properties are now selling and also at which lands are being disposed off. Hence, it would be correct to have a comparative knowledge of the sale values of different pieces of land and the different types of properties in rural areas. Several things may be taken into consideration in deciding upon the

sale values, the topography, the soil, the productivity, the buildings, the extent and the area. Situation, location and marketing have also to be noted in this connection. Sale values are more or less fluctuating from one period to another, and depend on the income from land. Analysis of the *income aspect* shows that the above factors are reduced to definite income, and account is taken of the acreage of cash and the subsistence crops, their average yield over the lending period, the trend of prices over the same period, and above all the profit margin out of which the peasant has to make payments on an instalment basis. In the first instance, the gross income of the peasant is estimated, *secondly* his expenses, *thirdly* the potential income of the peasant, *fourthly* the modifications thereof, and *fifthly*, the adjustments both in respect of the value of land and, *sixthly* the income from the buildings or the saving therefrom, and *lastly* the net income in the light of these.

Adjustments and Adaptations Great importance is attached to the security that is to be offered, and also the depreciation that it undergoes. As against this, loans would be heavy in their incidence, as time elapses. The adjustment to be made is with respect to the ability of the borrower to repay loans, this means that the repayment plan has an important bearing on the nature and the length of long term loans. Repayment plans should be adapted to the ability of the borrower to repay the loan. Some moneylenders may want to have sound long-term investments for their surplus moneys. In this respect, they would like to reduce heavy debts, so that the debtor does not feel the burden too much. Regarding the implication of long-term loans, it is evident that the income from fixed capital in agriculture is rather unstable, and agricultural organization could not be standardised with a view to ensuring stability of income. Repayment does assume an important place in agricultural lending for the factor of the instability of income enters in. The earning capacity of the peasant may vary with his age, his farming prospects and also his investments. It may be, therefore, necessary for the borrower as well as the lender to see that the plan of repayment is adjusted to the ability and the capacity of the borrower to repay. A good repayment plan would take into consideration certain factors, like the systematic regular payments to the lender, and the flexibility of the system so that the peasant is able to adjust the payment plan to his current requirements and also in accord with the cyclical trend of agriculture. It is not possible to lay down any hard and fast rules regarding repayment plans, which vary with individual needs and capacities.

Repayment and Amortisation The most common repayment

plans take account of the instalment basis. Mortgages may be amortised by means of annual payments which cover a period of about twenty or thirty years. (Amortisation means extinguishing the debt by means of a sinking fund). The plan is to pay off the debt over a long period by means of low payments, which may be equal instalments of varying repayments according to the capacity and the income of the peasants. Amortisation plans are able to accommodate debtor of varying needs and of different financial status. For instance, the plan may be to repay the loan off in about a decade or two according to the incidence of the loans and the means of the peasants. Such repayments may be in keeping with the net profits of the farm enterprise, in reasonable amounts and for the reasonable periods. The term "reasonable" is viewed from the ability of the peasant-debtor and also in keeping with his potential financial investment, and the income therefrom. Paying the debt in gradual instalments is the essence of amortisation plans, which are the basis of repayment plans. The repayments may be made monthly or annually or on any other basis acceptable to the parties and also convenient to them. The total amount, including the principal lent and the interest thereupon, is calculated and the total divided by the number of instalments. The annual burdens would vary with the amount borrowed and the rate of interest. Other repayment plans include variable repayments; the payments may not be fixed, but variable. According to another plan, a share of the crop or produce may be given in lieu of the repayment to be made, or its equivalent price. Sometimes, it is agreed that the share of the net income has to be given in lieu of the repayment of loans; this plan is to accommodate the low income group, for it is difficult for them to stick to rigid instalments. Other types of *flexible* repayment plans are also in vogue, for instance *sliding scale* payments to be worked out in special cases for borrowers, according to their incomes.

The Problem. The sum up this section, it may be pointed out that the problem is quite different for the simple reason, that there is in the first instance the complication arising from the purposes of the loan. Generally, long-term loans are made for the purposes of land improvements, for all the soils lack in one thing or another. But with a country becoming older, the problem gets more pressing, for without land improvement, the productivity from the soil is apt to fall progressively. Also, heavy cropping during the times of national stress and emergency deplete the soil, which must be replenished immediately. Thus the first problem in long-term lending is to equate the loans to the purposes to which they are to be put. In the second instance, too heavy a debt has a deleterious effect on land and the system of

farming Too frequent purchasing of land with borrowed funds has to be discouraged if the prices of land have not to become speculative and the burden on peasants, not too heavy If lending is considerable, it is possible that a large percentage of land under cultivation may be used for the heavy (and paying) crops so as to enable the peasant to pay off his debt, more speedily And then too heavy an obligation on the peasant may also compel him to economise in respect of his livestock requirements and equipment needs Burdensome borrowing may also be responsible in lowering rural standards of living The second problem relates to the burden of long term obligations, which should be such that repayment of loan accords with the net income of the peasant so that he does not experience any difficulty The next problem arises out of excess income being channelled to the repayment of obligations and liabilities and the creation of reserves This is a problem in adjustment of debt to the general farming activities and has an element of prospectiveness about it The last problem is that of the provision for a reduction in instalment payments when the income of the peasant fall below the correct standard of living, this is a problem in mutual adjustment between the peasant and his lender

Short term and Intermediate Lending Usually the peasant has more short-term and intermediate loans than long term ones Short term have some impact on the village organisation as this lending is mostly done within the village itself, some general observations, relevant to the problem are made and then are given some details about their kinds and types, the procedure and the purpose, and the nature of the various loans, like the intermediate, emergency and temporary loans All this would involve in a study of the problem from an intimate angle The range of the short term lending is fairly wide which affects a larger number of peasants, especially, the family farmers, who are in majority in the farming business

General Observation: The chief sources of these loans are the individual merchants and the banks, the credit corporations and the associations, the state and its organs, and finally the co-operative credit agencies The rural stages of making loans may be dispensed with for instance they may omit the appraisal stage, and the personal basis of the individual reputation may be taken into account The financial conditions of the borrower and the farm production may be assessed when lending Collaterals, possibly offered by borrowers, may be taken as strengthening factors In certain cases, it may be necessary to have the loan endorsed by some people of repute or of sound financial means The security requirements in regard to these loans may not be heavy as in the

case of the long-term loans. Unsecured loans are common in short-period lending, than the secured ones. The security requirements in regard to these loans are not so rigid as in the case of the long-term loans. Unsecured loans may be advanced to the operator of substantial means, with unquestioned reputation, in view of the past experience with lending in his particular case. Other considerations relate to the amount of the sum lent and the prospective income possibilities, as affecting repayment plans. The collateral required is usually the self-liquidating type. But insistence on the collateral may only be in the case of intermediate loan advanced on the basis of good and sound collaterals. This is the main distinction.

Kinds and Types. Varied are the loans that are made to the peasants. At least three types may be distinguished; the *crop* loans the *cattle* loans and the *general-purpose* loans. The *first* type (and its size) is based on the borrower's needs to carry on the operation of cropping successfully, or for the purpose of selling the crops at a remunerative price. Such loans mature and have to be repaid when the crop is ready. But crop failures may make it difficult for the loans to be repaid in full or at the scheduled time, thus the loans may be secured partially by some type of a collateral. In some cases, the balance may be carried over to some other more favourable harvest, when the peasant could easily pay. But the failure of one crop may not strain the lender, for he is used to such accidents in farming. Then there are *cattle loan*., which may be advanced for the purposes of purchasing cattle and their feed. These loans are different from the above in that the cattle purchased are pledged against loans, and the repayment made after the breeding or the shearing. The advances made take account of price fluctuations and have a safety margin. Then there are the *general purposes loans* which are of different types; loans for the purchase of feed, or for breeding or marketing or for processing. These loans are not specific, for the proceeds of the loan may be spent on things best suited to his requirements. Such loans require the liquidating collateral, which may be in the form of standing or storaged crops, or cattle or any other running securities.

Procedure and Purpose. Loans may be made for the purposes of financing a certain crop operation, or for buying cattle or feeding them, or for livestock farming or marketing the produce, or for the purposes of machine repairing, etc. The general-purpose loan may be for the purpose of incurring crop expenses, purchase livestock, or the livestock expenses of a miscellaneous nature. Sometimes, loans are renewed; the only advantage of such a practice is to make the loan on better terms as when it is renewed, or convert simple into compound interest. In all short-term

loans, the lender must know the set up of the borrower, his assets and liabilities. Thus some sort of inspection and appraisal may be advisable for the loan to mature. A local lender is apt to know all these things and is apprised of how the money is being spent. Procedure in respect of the negotiation of the loan may vary from the simple one of direct contact with local individual banker to the complicated one required by local bank. Banks and credit associations need detailed information about assets, liabilities and the purposes of loans, as also of full statement of the repayment programme. There may be complicated procedure of reporting by the inspecting staff and the statement of income and liabilities and operations. Thus the production records may be wanted. But usually such complicated procedure is not followed by individual bankers, who adopt simple and ready methods, often crude.

Intermediate Loans These loans are made for the purposes of the purchase of workstock and equipment, or dairy cattle, or breeding herds, or make such improvements as do not need heavy finances but only smaller sums. The sources of credit are, similar to those for short-term loans. For the purchase of equipment a loan is made in kind, full title is permitted on full repayment. Methods of easy instalments may be allowed, or the high selling techniques, followed. For dairy cattle, too, the loans are made in order to enable the peasant to buy or replace the present and dilapidated stock, the repayment requirements may be varied to suit the individual peasants and their resources, finances and incomes. It is possible that the expenses of dairy loans are big but yields low, in this case the repayment is long. On the breeding herds, intermediate loans, may be made, they are repaid out of the sales of cattle, some system of budgeting the loan is essential in this case. The loans which are made for the purposes of permanent improvements to cheaper types, such as making the farm suitable for the purposes of cultivation, are repaid out of real estate gains in terms of incomes and prices. But it is out of recurrent incomes that loan is to be paid out. The finances of the peasant is his status, the loans have not to be treated as isolated, or apart from the whole financial account of the liabilities and assets of the peasants. Great care is necessary.

Emergency Loans These loans are advanced with the sole object of letting the peasant or the borrower tide over a difficulty. The income from the farm is rather uncertain as also its production, hence the necessity for emergency loans which are demanded by peasants to tide over a certain difficulty. Disasters may befall the peasant and his crops may be damaged consider-

ably and his income, seriously affected. In such difficulties, he may stand in need of an emergency loan. Similarly, there may be difficulties arising out of tight financial arrangements; hence in slightest adversity the peasant, the borrower and the lender may find themselves in grave trouble and the emergency loan may have to be advanced. The best is to estimate the income conservatively and to allow for the expenses rather liberally, so that the eventuality for emergency loans does not rise. Still, room should be left for cyclical variations in agriculture, and the emergencies provided for so that the demand for such loans could be precalculated. If emergency loans are not advanced by the previous lender, the relations between the lender and the borrower may be strained. If private agencies are not coming forward to grant emergency loans, the state should rescue the peasant from desperation and demoralisation, in which case, repayment of all loans, long-term, short-term, and intermediate term, would be very adversely affected and the structure of agricultural finance shattered.

Temporary Loans. In fact, all loans are temporary. But the term "temporary" refers to such loans as are made for the short period but not for specific purpose. These loans are made for some unforeseen circumstance, which could not be described as an emergency, but only as temporary. These loans may be productive, or non-productive; but the fact remains, that they are not renewed, even for the short period, they are for the duration of, say a week or a month. A peasant experiences a temporary tightness in the matter of finances and expects money to pour in from the sale of the crop already despatched to the market, but he wants the loan for the interim period. Hence, the need for a temporary loans. It is a makeshift financial arrangement, made for the "meanwhile". In this case, this peasant is not required to give any security nor any endorsement, and very seldom a guarantee. It is from the local banker or the local lender that temporary loans are negotiated. No complicated procedure is adopted for these loans. The importance of temporary loans is not to be judged from the production point of view, but only from that of keeping up the morale of the peasant, this is an important part of the duties of a civilised state, for the peasants are exposed to all sorts of influences, if treated in a casual manner. It is the temporary loans that make the whole picture in matter of rural finance.

The Loan Problem. This section discusses the loan problem from the angle of administration, servicing and collection and the carry-overs. The amount of money is not so important as the relation to which a certain loan may give rise to. It is in this context, that problems arise of the servicing of loans, of the col-

lections and the carryovers, and that of their administration. Special attention is devoted in this section to the problems of low-income groups and the rehabilitation of peasants by giving them adequate money. A word is said also about the loans to be granted to tenants, and the loan plans. All these problems are important from the point of view of the creditor-debtor relations and also from that of the agricultural and the non-agricultural relations in the village economy.

Servicing of Loans It is the objective of lending agencies to service loans in such a manner so as to be sure of their recovery. The servicing of loans is an important matter from the point of view of good and correct debtor-creditor relations. The twofold objective of all lenders is to service loans in such a manner as to ensure that the loan is collected at the lowest possible expense and also to result in as few losses as possible. Losses and high costs of collection would in the long run be recovered from the peasant-borrower's pockets, hence the one objective of the servicing of the loans is to keep the expenses and the costs as low as possible. In this sense, the long-run interest of the borrowers and the lenders are identical. It is only when the servicing of loans is efficiently done that good creditor-debtor relations are stabilised.

Collection and Carryovers It is in collections and carryovers that the test of good servicing of the loans lies. Collection must accord to the terms of the loans-contract. Collections are possible only when sound loans are made, and payments are so arranged as to accord to the borrower's income, and not higher. Collection also provides for a definite programme of liquidation of loans. The collection part of the loan is always the more difficult one and this should be so arranged as to accord to the ability of the peasant-debtor to repay the loan. In the case of a security, the repayment of the loans is obviously speeded up. Again, it must be remembered that the anxiety of the lender to get the repayment made should not result in depleting or weakening his ability for future payments, nor adversely affect his productivity. It is unwise to kill the goose that lays the golden eggs. The unpaid part of the loans may persist either because of the poor crops or unremunerative prices or due to a depression. In the matter of the delinquency of loans, it must be found out if the same is due to temporary situation or to some permanent difficulties for specific remedies apply to special situation. In case the carryovers are in large quantities, the agencies of private credit dry up, and it is the state that must come forward to ease the situation. In regard to general delinquency, it can not be suggested that the peasant be left to the wolves, but some measures be adopted to settle the problem of debt delinquency. And this is

where the administration of the loans becomes a tough problem, but one which, due to economic fluctuations is important, in rural finance.

Administration of Loans. The administration of loans, specially in the matter of debt delinquency in times of stress and strain are the problems. A policy to be adopted by the lending agency in the times of the depression, needs be sympathetic to the peasant-debtor, so as to enable him to pay out the loan. In this case, the analysis of the borrower's finances is a prerequisite to the other steps to be taken ; these may be insistence on the liquidation of the surplus operating capital and collection of the short-term obligations, so that they do not get converted into long-term liabilities on the part of the borrower, who could be advised to keep his living and operating expenses within reasonable limits and pay the interest and instalments out of his income, even if in kind instead of cash. This policy requires detailed attention on the part of the lender. To the borrower, the advice should be to curtail the expenses as much as possible, so as to increase the net incomes, and if possible, also borrow additional funds for the payment of the recurring expenses of loans. And by mutual agreement, the principal amount may also be reduced.

Low Income Farmers. Difficulties experienced by the low income peasants are paramount ; the difficulties of servicing, repayments and administration arise. State assistance is rendered in matters of grave concern. Larger number of peasants belong to the low-income groups and when the difficulties arise in the times of the depression, they are adversely affected. How to settle their debt services to their satisfaction, to the good of the economy and amicably, are the issues. The alternatives before the low income groups are to get the rate of interest or the principal amount lowered, and sometimes renew the debt for another term, so that the short-term debt is converted into the long-term or the intermediate-term debts. In this matter, another alternative could be that for the state to come to the help of the indebted low-income groups and assume their liabilities at a lower rate of interest and clear off the heavy-rated debts. Kind payments, at fixed prices (and this may result in price stabilisation, too) may be made acceptable to creditors. In short, the bulk of the peasants being low-income group, the problem is rather important, for the lender, and the administrator.

Lending to Tenants. The problem of loans of tenants, and the payment thereof, is difficult, for in their case, the security offered is not tangible, they could not have land as security, nor could they offer a collateral one. It is only on the basis of

guarantees that they get some money on credit, or on endorsements. It is usually from the landlords that they get loans. In this case, the problem of repayment assumes a different complexion, in the times of depression. But the problem is not insoluble. Some suggestions may be put forward, in this respect, recoveries may be in the form of enhanced rents in lieu of interest charges in emergencies. Another thing could be to lower the rate of interest, temporarily, or to postpone the payment of due interest and the principal amount to another term so as to enable the tenant to pay the sum at his convenience. The problem with the tenants is rather ticklish, and the ways of settlement depend primarily on the nature of the tenancy, and the agricultural relations between the two. In case of share tenancy, for instance, the effort is to recover the amount in the form of the enhanced share of the crop due to the landlord. If the relations are cordial and dependable, it may be possible to wait till the crisis is over and the thing normalises. The problem is, however, not reducible to some set formulas, but depends on circumstances, peculiar to the case and also variable with different land tenures.

Loan Plans This is a subject, which is concerned with the creditors and the debtors alike. For the creditor must know, that the plans of the borrower are in the matter of the repayment of debt as also the purpose for which the loans are negotiated. The debtor must know the implications of loans he has incurred and the repayment plans he is required to implement, in the normal and the abnormal times. As between the creditors and the debtors there must be completely clear and concise understanding about loan plans. Emergencies and crises are a characteristic of the agricultural system, hence the need for flexible loan plans which may be designed to increase recoveries and repayments in the times of boom when incomes are high, and reduce them when depression sets. Another thing about the loan plans is the correlation of the same to the income trends of the peasants. This is difficult to achieve, for incomes decline, and the peasants want more credit, while incomes rise, peasants may want less credit, so that the two may not coincide with each other. The income of the peasant and the demand for the credit and his ability to repay and finally, the loan plans would mean adjusting the amortisation of the debts, the repayment schemes, in times of depression.

The Inference In the summing up, it could be said with some amount of justification that the problem of the loans is manifold, it is the problem of servicing the loans (giving the loans when the need for them is intense) the collection and carryovers (in case the loans could not be repaid in full), the one of admini-

stration of the debts and the credits (for that involves the problem of the adjustment of the loans to the changing fortunes of the farm and the special problems arising out of the cases of the tenants and the low-income groups, (for the problem in the matter of the repayments and the recoveries in their cases are not a little difficult), and finally those of loan plans so as not to disturb agriculture. Loan problems should be so attacked as to bring stability to the economy and its agricultural aspects as desirable and possible of achievement in the agricultural sector. The loan problem, it may also be stated parenthetically, is highly personal and local in its character.

Marketing Finance. The gravity of marketing problems to the agricultural sector of the general economy is inestimable. Marketing finance, in this context, refers to the financing of firms, selling farm products and dealing with agricultural produce in the primary stages. This problem is sometimes solved by the peasant himself. But there are some differences as between the marketing finance and the problems attacked above. The turnover of the peasant's capital is less rapid than that of middleman marketeers. The assets of the merchant are more liquid than those of the peasant. And there is the corporate form of merchant organisations dealing with marketing functions.

The Requirements. In this connection, the requirements may be assessed in the light of the following considerations : the requirements of cash for the purchase of produce, advances to the producers of farm products, cash for current expenses, and money required to set up an organisation for the handling of marketing and the allied functions. It may be pointed out that the needs are quite inflexible. A local grain buyer wants capital, preferably cash, for all the above purposes and his requirements vary with the turnover or the size of his business and the organisation that he is to handle. Advances are needed by the grain merchant for the purchase of grain from the peasants, while the livestock dealers demand cash for the purchase of cattle, but not in such big amounts, though the requirements in this particular case are of a longer duration. Hence, the requirements in respect of different commodities differ.

Sources and Finance. Finances are drawn from invested funds as represented by stocks and shares. Long-term borrowing is another source, especially, for mortgage finance on plants or stocks in hand. There may, in addition be short-term finance, available from banks or current payments or advances from wholesalers or the current payments due to merchants. Financial ratios have been evolved to solve the problem of marketing finance.

There is the *current* ratio, that of current assets to current liabilities, the merchants may not mind an adverse ratio. But the *running ratio* or the one of quick assets to the *quick* liabilities has is taken into account, this ratio should be favourable to the merchant, for if adverse, his insolvency is indicated. Similarly, long term ratios should also be favourable, as adding to the solvency and the strength of the dealers. And *book value ratios* are another device to the same effect, to adjudge the stability of the merchant. But more important are the *earning ratios*, which earnings bear to the capital invested, or what may be described as the *return*. Gross earnings are not important but net earnings are, for the latter determine the financial stability of the undertaking, and provide a basis for loans.

Practices and Loans Attention may be diverted to good financial practices, which may be recommended so that merchants care to put their business on a sound financial basis. In this connection, it may be observed that it would be wild to lay down any hard and fast rules to be observed for good practices, as these depend on special circumstances. Still, the bulk of the capital should be *owned capital*, while debts should be kept as low as possible, so that the merchant is not involved in unsound debts and obligations. Another suggestion is cautious spending of money on elaborate plant, equipment and office, etc. Still another piece of advice is that the speculative practices (not futures) may be avoided, for they would invariably lead to the insolvency of the merchants. Operating expenses should be held as low as possible in the interests of business and profit margins. They finance the purchase of commodities from the primary producers, and may have to borrow some moneys for the financing of transactions. These loans should be paid off at the end of each storage season, and for this purpose, there may be pooling and the giving of partial advances of money to producers for that would ease the burden on the marketeers. But in the case of commodities, stored by merchants, this method may be difficult to adopt. Advances may be for the purposes of production, but this is not a major item with the merchant, for there are many other agencies in the field. Again finance is needed for the marketing organisation, this could be secured from banks on collaterals of the produce, stocked. And money may also be required for the purposes of speculation, but, as pointed out above, this is the one type of investment that is to be avoided at all costs. It is possible to solve all these problems by setting up co-operative agencies.

Costs and Links What are the costs of extending credit to merchants? And what is the relation between merchants and credit agencies? In reply to the first, it may be pointed out that

the merchant credit is needed as that helps in selling goods, or in marketing them. The costs of obtaining credit are kept at the lowest in the interests of keeping the marketing charges at the minimum. This problem is that of the provision of credit facilities to merchants at the lowest possible rates. The costs are composed of *three* constituents; interest on the funds invested and tied up; the costs in respect of book-keeping and accountancy; and the costs incurred for losses and bad debts. All these costs have to be reduced to the minimum. Another point that needs to be appreciated is the way in which the attempt to reduce costs is to be made. In this, there are various methods; drastic steps include refusal on the part of the merchants to their clients (but this is too drastic a step to be advised), another one is to deal on a cash basis, this may also be difficult. Laying down limits for different individuals is also another device for the same end. It may be possible to encourage cash dealings by offering discount on such transactions. The same end could be achieved by charging interest on credit deals. Salesmen could be held responsible for the collection of cash from the individual dealers, but then the dealings may be considerably decimated by salesmen with disadvantage to their business, and this may consequently reduce the profit margin. On larger items, the merchants could ask for securities; as for example, crops may be taken for advances given, or the *conditional sale* contracts may be used instead. The merchant could also reduce "costs" by following good and speedy collection policies, by sending out regular notices to his clients, or by personal contacts with them. In the extreme, the step of taking wider profit margins to accommodate any bad debts, may also be adopted, but this would reduce the competitive strength of the merchant, who may, therefore, be hesitant in following this policy. A correct policy is derived from the circumstances of the community and the merchant himself. Regarding the "links" between the merchant and the credit agencies, it may be pointed out that closest ties are binding the merchants and the bankers, for without such intimate connection, business may not prosper.

Storage and Warehouse Finance. Attention may be directed, in this last paragraph of the section, to warehouse and storage finance, in order that the full perspective of the marketing finance may be obtained. The essential requirements, in this connection, are good storage and warehousing facilities for the protection of goods, which, in agriculture, are of a perishable nature. This would also involve some expense for insurance of stored commodities against loss. The storing facilities should also be of such a nature as to ensure a regular flow to the market, without in any way prejudicing prices or adversely affecting them. Warehousing receipts could serve as collaterals for

negotiating loans which the merchant may like to have for his marketing expenses. The nature of the receipt is an important and significant determinant of the amount to be advanced to the merchant. The profits from the storage of crops depend on price trends during the time of the storage, in this sense, storing should be done on very rational grounds and also on the basis of price trends. Warehouse receipts play an important part in securing credit from banks and other such institutions. The receipt, which is the basis for the grant of loans, would be suitable and helpful if it correctly gives all information in regard to the amount and the quality and the grades of the commodity stored. It must also underline the relationship between the bailer and the bailee for it is on this basis that credit is extended. And then the condition, for the grant of credit on the strength of the warehouse, may require that it is not under the management or the supervision of the interested party, the merchant in this case. Usually, credit is granted on the security of the warehouse, which is passed on to the management and the supervision of the lender or the financier.

The Co-operative Finance In this section is dealt the problem of the Co-operative financing. In view of the large amounts needed, it is difficult to operate strictly on the co-operative basis. Most co-operative associations are of a local character and provide for their loans and borrowings on a local basis, with guidance and assistance, from the headquarters and the Central banks. Co-operative finance has the advantage of inspiring the peasants with the idea of self-help and also that of restricting the credit to the resources of the community. In this respect, attention may be drawn to the fact that the finance being only extended to members and for their genuine needs, co-operative finance has also the advantage of identifying purpose and use.

Credit Unions A group of people with some bond of common interest and living in the same community, agree to form a credit union with the object of giving loans to each other, on very cheap basis. Savings are pooled, and out of these savings are advances made to members. Small sub-committees of members sanction these loans and see to their genuineness. The rate of interest is also low. They may finance the poorer lot, the low-income groups, the working men and also the labourers. They also encourage the twin virtues of thrift and savings. State has recognised the movement and passed laws enabling the movement to prosper. The organisations are small and they are performing functions useful to farmers in the extension of cheap credit to them. These organisations are mostly operating in the rural

areas. But there are pitfalls, too; one difficulty is the low amounts which the union could advance to the peasants. Another difficulty is the lack of finances. Still another difficulty is mounting bad debts. And when the state intervenes, the people lose their own initiative and leave things to the state officials. And then the lack of banking experience on the part of the peasants has also been another influence working in the same direction.

Loan Associations. These associations feature the American rural society. Their function is making, servicing and collecting loans; and guarantee loans, made through them. The associations provide local credit services and also assume financial responsibility for the loans made to the members by the Federal Land Banks. They would, therefore, be careful in recommending loans they want their members to have. The funds, obtained by the association, are invested in the bonds and the stocks of land banks. Apparently, it is quite all right, but in actual practice, some defects have come to the fore. There is the divided responsibility as between the loan associations and the land banks. And there is the lack of income, and of interest by members of the association. But the associations have done wonderful service to the farms and farmers in recommending them to be considered for loans. Land banks can grant loans but the responsibility of the realisation of the loans is that of the association. Greater responsibility is being shouldered by the associations, and limits are put on their recommendations.

Mortgages and Short-term Credit. Attention may be invited to mortgage institutions, which grant mortgage credit to peasants. Mortgage credit institutions have attracted a lot of attention. The origin of the institutions may be traced to the German *Landschaften*, to which the landowners pledge mortgages of their land in order to obtain credit. Amortised lands are made by these banks. The loans have very very long maturities, and in certain cases are permanent debts. Bonds are issued and retired in order to secure so much needed credit. These institutions have also been organised on co-operative basis in other countries and have proved a success, too. But the defects relate to the lack of experience and expert knowledge about the working of the land mortgages on the part of the members, the promoters and the organisers. Hence it is, that these institutions have not worked well in the regions where they have been transplanted, now. Another defect is the usual malady of the lack of funds. In most countries these institutions are being run by the State; public land credit institutions, as they are named in most European countries, are also established, for the same

purpose. They issue bonds, secured by mortgages, and guaranteed by the state. The lower credit ratings of the peasants hinder business. Central banks help them. The overhead and the operating expenses should be reduced. In regard to short term credit, it may be stated that thousands of such associations are operating nearly everywhere. These institutions are quite similar to the credit institutions described above, with the only difference that they are small institutions, just community affairs, even when they have connections with banking institutions. Their operating costs are low and the work done is without charge by the members. They play an important role in the reorganisation of credit on co-operative basis.

Financing the Co-operatives. The financing of co-operatives is an important problem, for left to themselves the co-operative credit associations do not have sufficient funds to finance their way through, and then they are also encumbered by the incidence of bad debts, which reduce their financing power. It may be said that the co-operative banking institutions may finance co-operative associations, and give them loan for the purpose of financing the peasantry. Still, the financial needs of co-operatives are now expanding, with the result that it has become well-nigh impossible for them to stand on their own legs. They obtain the necessary finance by inviting deposits from the general public to finance the movement and the farmers who may be in need of the same. It may also be that they obtain the finance by means of bonds, (guaranteed by the state) which they sell to the public. Another way is by subsidies from the state. It is by all these means that the co-operatives obtain the necessary finance. But the most important thing is not getting finance, as its misuse, for that is a greater danger to be faced by the co-operatives. It is always good to have some training in the methods, techniques and principles of co-operation and then to go ahead with co-operative credit. Apex co-operative banks are also established to finance the regional co-operative banks, which, in turn, finance the unions and the associations. It may be pointed out that the financial problem is to be solved in the context of the special circumstances attendant upon the situation peculiar to the locality and the conditions there.

Farmers' Insurance Needs. The insurance needs of the peasant embrace all forms of economic activity. Now the scope of insurance has been very much extended, to cover such forms as crop and cattle insurance, too. Insurance, also, is a source of finance, for the money is given when required. Needless for us to go into the principles of insurance. Suffice it to point out that insurance, in the sphere of agriculture is a provision against the

risk and the hazards, attendant on the same. In this connection, it may also be pointed out that the provision of insurance is as great a necessity for the peasant as for anybody else : in fact his need is greater, for the simple reason that his vocation is attended by greater instability. For instance, the need of the peasant for accident insurance is greater than that of the city dweller, for the fact is that the accident rate in the sphere of agriculture is high.

Aims and Objectives. The chief aim is to stabilise farming operations, by making available to the peasant the finance that is needed by him at time of emergency. By paying small amounts in the form of premia, the peasant is able to get a large sum of money sufficient to cover his expenses, which may be incurred in an emergency loss, which is suffered by him. A crop, which is insured against risk of loss, need not be a source of worry to the peasant nor need he fear that the destruction of the same would mean any financial loss to him. Similarly, when the peasant has insured his cattle, he would not be in danger of having to suffer on account of loss. Another objective is to ensure among the peasants the habits of thrift and savings; they very seriously lack this habit. And finally, insurance culminates in giving the peasants, the much needed experience in the matter of community savings. Thus insurance would help the peasant and stabilise agricultural operations, too.

Organisation and Operations. The usual form of organisation may be a mutual or a co-operative one, which could be of help to the peasant. Possibly, well-established insurance companies may undertake the business of insurance. The management of an insurance organisation may be vested in the board of directors, formed under law. The directors may be elected by the members of the insurance society at their general meeting for a term, usually not exceeding three years. Sometimes, a part of the directorate may retire every year; this gives advantage of continuity of policy, which they may enforce from time to time, but without vested interests being created. Votes may be allotted on the basis of the insurance carried, policies, investments or shares and stocks held. The officials may be the president, the vice-president, the secretary and the treasurer, and the auditors (who may be appointed by the state), all the others being elected by the directors of the company, or the society. In the case of companies, the liability is limited, while other organisations may have unlimited liability. Regarding the operational side, the usual practice, with the mutuals is to appoint special agents to solicit business and membership. The applications for such purposes go to the officials, local and in the headquarters, the final authorities for sanction. The farmers' mutuals, as the co-operative insurance societies are styled also cater for membership

drive, for the larger the range of membership, the greater is the security and better the resources of the society. Sometimes the agent is paid on a flat percentage, a fixed fee on commission basis. Full cash premiums are also collected by the societies. In the case of loss to the articles insured the payment is made to the assignee, who need not starve for want of funds, under insurance.

Forms of Insurance There is a great multiplicity of the forms of insurance: fire insurance, crop insurance, cattle insurance, windstorm insurance, life insurance and accident insurance. *Fire insurance* protects the peasant against loss arising out of fire and the damage resulting therefrom: it covers risk against lightning loss. This type of insurance is provided by joint stock companies and farmers' mutuals. Insurance companies also insist on reasonable precautions against fires and protective measures to be adopted by the peasants, insuring against the risk of fire. The educative influence of the fire insurance as also of the other types is inestimable. *Crop insurance* is the most important type of an insurance service developed in rural regions: crops are insured against risk of loss or damage by hailstorms. Insurance takes notice of standing crops and its follow-on. Crop insurance gives protection against all odds and hazards, such as drought, rust, insects, animals or any such pests. This insurance is, therefore, potent in providing stability to the peasant. *Windstorm insurance* provides protection against windstorm hazards and is now going out of vogue. *Livestocks insurance* may be more beneficial to the peasants, for it provides against the loss of cattle by disease or accident, as also by fire or theft.

Insurance Finance What about financing farm insurance? This question has to be tackled in the light of the meagre resources in the countryside. Finance may be partly secured by means of premiums: but if dependence is on this type of finance, the disadvantage is in the form of higher premium rates. Assessments may also constitute a major source of this finance. Similarly, membership fees are another source of finance. This analysis refers to the farmer's mutual, for in the case of the joint stock insurance companies, the sources may be from joint stock funds. Contributions and deposits from members, also, may constitute another source, on which some reliance may be placed. Levying an assessment, after each material loss, is another method for financing insurance. But with the growth of the size of concerns, this does not remain a major source. Or, the reliance may also be placed on borrowings from the state or the banking organisations to finance the extraordinary losses incurred in exceptional years. In this respect, it may also be stated, that the source of finance may as well be the State, or the Central bank who may be inclined to encourage this venture, in the interests of sound farm finance.

Summary and Conclusions. The subject of agricultural finance is vast, and also complicated by several considerations. The most important one relates to the inelasticity of demand for funds on the part of the peasant. With his resources limited and his staying power low, the peasant's dependence upon external finance is great. It may also be stated that the finances required by the peasant are of several types; the short-term, the intermediate-term, the long-term, marketing and co-operative finances, the last two being indirect ones. All varieties of financial needs were adjudged in the light of the problems of the peasant. It was discovered that the short-term finance (the most common required by the peasants) is mainly arranged from internal sources, *e. g.* the individual money-lender or the merchant, while the long-term finance is mainly drawn from external sources. Another point is that while the peasant's need for the long-term finance is elastic, his demand for the short-term finance is mostly inelastic; the longer the term of the loan, the more elastic is the demand for the finance. This conclusion seems to hold true in major cases. Another conclusion is that the financial needs of the peasants are of differential nature, varying with cyclical and other changes and variations in the agricultural sphere. The lending limits of the peasants also vary with different financial agencies; the most liberal agency is the state, but in this case, too, the budgetary needs put a limit on financial assistance, rendered by it. In regard to social aspects of the problem (and in this is also included the legal ones) it was noticed that the best agency in the circumstances was the State for shorn of its red-tapism, it did not have bad social consequences, which the other agencies might have; in this connection one might even recommend the nationalisation of rural finance, in view of its advantage of low rates, and long terms. The problems of repayments and recoveries and carryovers raise special questions. Repayment has to be adjusted to the peasant's paying capacity, which in times of stress and strain, is seriously affected, with the result that the paying demands must be adjusted in the interest of good agrarian relations. The problems of emergency lending and lending for temporary periods were discussed; the most important point is that these unforeseen demands on the part of the peasant, must also be met, if only to enable him to tide over a difficulty. Marketing finance was examined; the problem needed closer examination, the requirements in this respect varying with the type of the merchants and his practices. The financing of the co-operatives was an important contribution of the analysis to the main argument; the co-operative methods of finance, though important and useful are not dependable for they are weak sources. In regard to the insurance needs of the peasant, were examined the main forms of organisation and their operations; and the extension of the farm insurance was advocated, in the interests of financial stability.

FARMERS AND THE FUTURE

The Farmer Rural Aspects Research and Reorganisation Environment and the Community Types of Rural Institution Legislation and Policy State and Agriculture—State Intervention Agricultural Policy Production Policies Marketing and Distribution Mobility and Diversion Agricultural Protection Controls and Restrictions Subsidies to Agriculture The Co-operative Movements—Scope and Objectives Types of Co-operations Organisation and Functions Successful Co-operation Pitfalls and Dangers Planning for Agriculture Need for Planning Difficulties of Agricultural Planning Aims and Objectives Forms of Planning Integration and Co-ordination The Planning Authority Rural Attitudes The Peasant's Participation The Future—The Problems Inequalities and Prices Standard of living The Country and the City Population Movements The Question Mark Concerted Action The Extension Services An Epilogue

This last chapter peeps into the future. All welfare movements seek to elevate the standard of living rather than standards of production. The future of the farmers and not that future of agricultural industries is important. The objective of a higher living standards of the peasant being fulfilled, the welfare of the major part of the world is also realised, as this is what determines the welfare of larger numbers of the world's population, which is composed of peasants. This chapter starts with a preview of the situation and the setting in which the peasant finds himself—a descriptive survey of the farmer's style and status in the society of which he is a member. The next section deals with the all-important topic of state intervention in agriculture, and discusses such important subjects as agricultural policy, agricultural protection, and the restrictions and the controls imposed in the sphere of agriculture. The one thing that appears to have been omitted is the price policy, to which was made extensive and detailed reference in an earlier chapter on "Adjustment by Pricing." The scope and the usefulness of the Co-operative movement is examined in the next section, which is devoted to its types, organisations and objectives, separate section studies the problem from the point of view of the peasant and his attitude. Suggestions are made about reducing inequalities of wealth, improving living standards of the villager, directing population movements, and controlling the impact of prices on the peasant and his living conditions. What remains still unsolved, how it would be solved, also attracts our attention in the end.

The Farmer. The growth of national wealth and income does influence the peasant too. For instance, several amenities

of life have been introduced in rural areas, with the consequential modernisation of the village. Due to greater contact with the cities and the urban areas, the life of the peasant has been transformed. Greater opportunities for improving his economic, social and political status have been provided now than ever before. With better farming, the emphasis has also been shifted to better living. The possibilities for better reorganisation of the countryside and peasant life are now more numerous and it has been demonstrated now, that with a proper approach, the status of the peasant and his resources should also improve considerably.

Rural Aspects. Many are the hopes and the fears in the rural areas, it is on the basis of these that the rural society is built and reconstructed. Landless labourers nurture the hope of rising up the social ladder and the tenants of becoming peasant-owners. But these movements upwards in the social scale have to be punctuated with some struggle on their part. And there is resistance at every step; it is here that the state and other agencies could play a vital role. The peasant is the product of his environment, which has to be improved to bring about an improvement in his status. Now that the attention of all the progressive elements is focussed on farm families, the problem is to be viewed in proper perspective. The reinvigoration of rural life is not the same thing as the poetic appreciation of nature and rural landscape; it is rural prosperity which is essential to the revitalisation of the rural society. Admittedly, the movement to raise standards in the countryside is not just philanthropic but one calculated to improve the very foundations of national economy, and to put the same on surer grounds, too. It is directed to the reorganisation of the rural movements in such a manner as to replace the existing maladjusted social relations and to eliminate social inequities. Urban life, too, may gain from the development and the reorganisation of the country life and the rural institutions, which is the object of reform by the planner.

Research and Reorganisations. It may be maintained (and correctly) that the lines of development would follow research conducted into the state of affairs in the rural countryside. There is lack of information about the conditions in the countryside and in this state of imperfect knowledge, it would be inadvisable to go ahead with any plans for the reorganisation of the rural society, for that would be a leap in the dark. Agricultural surveys are an important prerequisite for development plans and programme. A rural survey should include exploration, inspection, judgment, and a campaign for facts about particular rural aspects, and should be a scientific record of the entire situation, as it is and not as it should be. The problems of all communities are typically local

and entirely peculiar. Every community has to build its own life on its own organisational set-up, and therefore these surveys should be undertaken by several independent agencies, to afford checks and counter-checks on the same facts, as collected by each individual agency. These surveys should be undertaken by schools, agricultural department, boards of inquiry, welfare organisations and other such organisations and state agencies. The pan of research should be on a co-operative national basis and we l-integrated and co-ordinated, too, for without this, the position would be incorrect and even misleading. Also selected problems should be taken up for study, and methods of research agreed upon. In this connection, a census of population may be of use if in pointing to the directions in which further efforts should be directed. It is on this basis that the reorganisation of the rural life is to be undertaken. Reorganisation must notice the place and the role of the household in the rural areas, and try to bring about a re-integration of the family life, or at least protect it from external disintegrating influences.

Environments and the Community In this environmental sphere, the first rung of the ladder is the family which should be reorganised and put on a stable basis, for no social progress is worthwhile if the family weakens in the process, especially in the rural areas, where the attachment of the peasant to his family is very great, and where the unit of production and operation is also the family. The role of the family is of utmost importance. Better living in the home and making it more beautiful and attractive to live in goes far in providing the much needed impetus to the peasant in the way of bettering his circumstances, and serving as an incentive for making farm practices better. That home is the source of living in villages, should not be underestimated. The burden of debt is to be taken away from farms and households, without this step it would weigh heavily on them and damp their living. And foremost of all, the household must be stabilised, for stability at home would bring about stability in the community, too. Next ranks the neighbourhood. Family life is environed by neighbours. The drama of life is enacted among neighbours and their relations to each other. It is because of the neighbourly influence, that even the more progressive elements in rural areas, get damped and have to accord to the less progressive ones. It is admissible that *neighbourhood* is a loose and incoherent organisation, especially in the West, but in the Eastern and "backward" economies, the looseness is not marked. Some bonds may be traceable, those of race, topography, institutions and religion. It is conceded that howsoever loose the neighbourhood may be, it is still an important influence in the country's reorganisation. Scientific farming needs good neighbourhood spirit, and enterprising neighbours, with progressive

approach to various problems. All these are the prerequisites for raising rural standards. Technical co-operation could only thrive on the foundations of neighbourly co-operation. Good neighbourly spirit is very essential to the advancement of farming. Common policies with respect to sanitation and communications in the vicinity are essential to the maintenance of good relations and also good agriculture. Neighbourhood population groups are the most important ones in the economic utilisation of local resources. This is the result of the social texture, social psychology and social economics as operative in the countryside, and as emanating from neighbourhood. Also, the foundations of the business community (the next rank in the social set-up) are in neighbourly relations. The farmer, as he conducts more economic activities, is a member of the business community and is under its impact. The most important thing that the peasant needs is the *esprit de corps* of his fellow business associates. It is idle to imagine that the peasant is an isolated seller or buyer of produce, for even the price he pays or gets is the resultant of forces operating on a communal scale. And then there are obligations and responsibilities attendant upon the peasant becoming a member of the community to which he belongs from the business point of view. Neither could the businessmen ignore the peasant, for their business is rooted in the attitudes of the peasantry, their resources and productive efforts. Legal relations originate from business relations, practices and associations.

Rural Institutions. Important rural institutions relate to education, business, society, religion and health. True, the farmers could sometimes go on without the exchange mechanism. What business institutions are conducive to the betterment of the peasant is a moot question, that is to be decided in the light of local traditions and conditions. Business institutions determine the economic conditions of the peasantry. The problem of business institutions and mechanism is one of devising the ways and means for building up of farm life, through a system of integrated social channels and the mechanism of business activities and methods. The business and the agricultural interests of farm life are closely integrated ; this needs to be appreciated. For instance, the fact that the peasant has to sell his produce, is sufficient to suggest that business institutions influence his income. An improvement of business mechanism may ensure the stability of income to the peasant. The impact of educational institutions is of the utmost importance in building up the future society and also giving the correct leadership to rural peasants. Schooling determines the social fabric, potentially speaking. The fact is that deficiencies mark school education in rural areas. And the problem is one of reorganisation of the educational system in the

light of the needs of the countryside. In this matter, it has to be recognised that the school could also serve as the centre of guidance and information for the peasants, hence the selection of the teachers should be made accordingly. Next are the religious institutions for the peasant is more or less religiously inclined, at least more religious than the urbanite. The rural religious institutions play a significant part in the formation of character and other qualities required for the improvement of life provided the religious teachings are interpreted in the correct manner. These must conform to the nature of the population. Social institutions have an important role in racial relations of village life. The problem is that of bringing about a concord as between the economic life and the social traditions and institutions. Spice and entertainment should be injected into the life of the peasant. Health centres must be mentioned for the maternity general and veterinary hospitals reduce a lot of waste. Such institutions must be multiplied in the interest of the health of the people. Government institutions refer to the local self government in the village with their extension the spirit of the peasantry is high, and the peasants' problems tackled in an autonomous spirit. Extension services are dealt with below.

Legislation and Policy A word need be said about legislation for rural areas. State activities also extend to the tax structure in the countryside and the employment of other services in rural areas. Legislation has to be encouraged on such lines as do not seem good to the legislator but are realistic. Rural legislation embraces a vast canvas: it includes debt legislation, land legislation, etc. The framing of legislation for the rural areas means a definite policy to be chalked out and a definite programme and outlook on the part of the legislature and the party in power. Land policies, it may be said, parenthetically, are important in the development of the personality of the peasant, for they determine the land relations in the village and these land relations are the most basic for rural relations. And legislation should be based on research and investigation into rural problems, for then it would be able to remedy effectively the malady that infects the countryside. Legislation should also be such as may be possible to implement, otherwise it will be useless.

State and Agriculture In this section, it may be worthwhile to study the inter-connection as between the State and Agriculture in a country. The State policy towards agriculture is quite relevant to its complexion in the economy. State may directly intervene in the agrarian structure through the formulation of the national agricultural policy which fits in with her general economic policy, production policies in the sphere of agriculture and state policies regarding marketing and distribution, the diversion

of resources from and to agriculture, (as the circumstances may warrant), policies regarding controls and restriction in the agricultural and the general economy and finally agricultural protection, and the subsidies to agriculture. It does appear, from this enumeration, that the field to be covered is sufficiently vast, and one which is beset with great difficulties and dangers; and needs careful implementation by the State.

State Intervention. The assumption so far in this dissertation has been that the economy works *smoothly* on the basis of free and open competition, while the state may also intervene in economic spheres. Special attention needs to be devoted to the agricultural sector, because of the dependence of agriculture on land, the systems of tenure and the laws of succession, which derive from the statutory and social framework. The second reason for this intervention is that agriculture is predominantly a small-scale industry, usually under-capitalised and often starved of capital so that the state has to make up for the deficiency, and also protect him against the middleman. And agriculture and other allied industries remain comparatively depressed, making it necessary for the State to come to their rescue. Fourthly, agricultural prices and therefore, profit margins in agriculture, also fluctuate very frequently and also very intensely so that it is essential for the state to safeguard agricultural interest and to see that the fluctuations are minimised. Fifthly, the various social and political factors and forces also make it obligatory for the state to intervene in the agricultural sector. Sixthly, the view-point of the agriculturists is not progressive so that the state has to take up cudgels not for the sake of framing necessary legislation, but also for rousing enthusiasm of the cultivators. Lastly, the state has more often than not to supervise and guide (if not actually finance) the co-operative movement, which is increasingly playing an important part in rural reconstruction movements.

Agricultural Policies. State agricultural policies may concern themselves with the whole of the rural and agricultural arena. The term 'agricultural' policies embraces a vast field of state activities for they may also include the policies of increasing and multiplying the agricultural and general economic opportunities in the rural sector. This topic is, however, outside the scope of this elementary treatise. Suffice it to point out that the agricultural employment policies affect the demand for labour and also the income of the agriculturists. Agricultural policies also include policies towards the debtor-creditor relations in rural areas (dealt with in a separate chapter on rural finance) and labour legislation, affecting the field of agriculture and the landless labour employed in cultivation. Agricultural policy, broadly interpreted, refers to

the policy, broadly interpreted, refers to the policy about cottage and rural industries, and about land distribution and land tenure. It is not possible to deal with all these phases (of agricultural policies) in this short section, hence treatment is selective. It may be noticed that the main forms of policy relate to production distribution, control, protection and diversion of agricultural resources from and to the industrial sector.

Production Policies The main efforts of all enlightened and welfare states are directed to increasing productivity of agriculture. If possible, quality is also sought to be improved in addition to the increase in quantity. The State could adopt a good rational policy towards the land tenures and improve its productivity. Such a system of tenure has to be evolved as would secure the tenant stability as also improve productivity. (This aspect of the problem has been dealt within the chapter "Ownership and Tenancy"). It is the effort of the state to increase the productivity of land from the qualitative angle for the state may become owner of land, so that all production policies could be implemented as desired. State may also be able to improve productivity by the regulation of land ownership in such a manner as to implement production policies. It chalks out. The state may supply free advice to peasants who want the same, and also requisites of agricultural production, such as fertilizers and feeds, at nominal charges. It would be of service to peasants by providing cheap breeding services. In brief, state help and assistance is essential, and *secondly* without this help the deficiencies in productive apparatus are likely to persist. Both the points are interrelated and between them provide the answer to the limitations of the state policy in production.

Marketing and Distribution In this respect, the reader may be advised to refer back to the chapter on agricultural markets, as a background to the whole problem of state help and intervention in the sphere of marketing. State intervention in wholesale trading is for the interests of the consumer. But more important from the view-point of the peasant is intervention to lower the costs of marketing, to this end, states have devised such policies and legislation as may bring about a lowering of costs, by fixing maximum charges at each step. This must be coupled with regulation of marketing system, of the weights and measures and of retailing. Adequate information about correct price and production trends, the provision of storage facilities at nominal costs, the system of zoning to eliminate the excesses of competition, the fixing of ceiling and floor prices, and undertaking of retail operations by the state or the semi-state authorities, are some of the devices. That may be adopted by the state in ensuring good and efficient marketing. In the sphere of wholesale trading, the

state may have different objectives, as the ensuring of right profit margins on the part of dealers so that the demand for the commodity may not shrink, or exploitation of the peasants is eliminated. Two methods have been usually adopted by the state ; that of co-operative marketing, and that of supervision and control. The first method has already been dealt with above. Regarding the second, some means and measures were enumerated. It may not be out of place to mention here, that setting up of boards of inspection and of enforcement of standards would go a long way to ensure fairness in marketing practices. Direct efforts may be made to encourage competition among the middlemen so as to secure good prices to peasants, if it be not possible to define and regulate the charges. And then the state may also prescribe standards of quality so that the interests of the consumers could be safeguarded. And in the last instance, the state may itself assume the marketing functions.

Mobility and Diversion. The next step in state policy is towards the proper diversion of resources to agriculture. The allocation of resources, would, in the long run, tend to be according to the principle of the equi-marginal productivity but it is the disparities in the distribution of resources as between agriculture and industry that needs to be corrected by the state. Not merely this ; it is essential to provide mechanism for the transference of these resources. The consumers and the producers (both agriculturists in this case) are benefited by the improvement of techniques. The state could also take steps to remove inequalities and disparities as between industry and agriculture, by accelerating the transference of the productive factors from one to another. The state should also assist in the movement of labour and capital by providing information as to better and more remunerative occupations and also by direct assistance to productive factors. It may also be emphasized that the same ends could be achieved by modifying the practices of the peasants, advising them to introduce such crops as are likely to be in great demand, and also making available to them the fruits of research. Sometimes, the state may compensate the peasants for adopting the practices enabling the shift of agricultural production in the desired manner. But in the transference of the labour force, different methods may be adopted, *e.g.*, providing cheap means of transport and better remunerations in alternative occupations.

Agricultural Protection. Protection of agriculture is not similar to that of industry for the problems and the issues are vitally different; the objective is to make agriculture less vulnerable to various influences from outside. Also, the objective may be

to prevent and eliminate altogether, if possible fluctuations in individual commodities, their production and prices, by adopting suitable policies. The interests of the agriculturists are not always furthered by the state at the expense of the general economy and the state revenues. And then such schemes may be adopted as are to the specific benefit of a particular region, by means of subsidies or grants to agriculturists in certain regions. Transference of economic benefit could also be effected by taxation and fiscal measures. A part of the agricultural sector may be nationalised, in the interests of agriculture, if this sector is too weak for the private initiative to exploit. Sometimes, expansion and progress may only be ensured by means of compulsion so that certain proven beneficial practices may be adopted on the widest scale possible, certain methods of cultivation may be forced on cultivators. On non economic grounds, too, assistance to the agricultural sector may be advised, for political or for social stability. In this place, mention may be made of the specific forms of protection, of wages and of incomes etc. The protection of wages may take the form of fixing minimum wages. But it must be clearly understood that the incomes of the peasants need not be raised by restricting output and production. The best method is to improve employment opportunities in agricultural and rural areas. Steps should be so designed as not to damp the employment prospects in the agricultural sector. In the light of these considerations protection is to be very cautiously implemented by the state.

Subsidies to Agriculture Direct subsidies may benefit the agriculturist in a greater measure than other devices of a protective nature. Direct payments to the peasants would mitigate the evil effects of fluctuations. Direct financial assistance could also break the vicious cycle and help the peasant overcome the difficulties experienced. In times of emergency, direct aid enables agriculturists to overcome resistance in growing certain strategic and essential crops. Subsidies may also be given to encourage the cultivation of certain crops, so as to reduce the country's dependence on foreign supplies. Subsidies may revive some old but good agricultural industries and practices. Another objective may be to increase the general productivity of the agricultural system and encourage the adoption of better types of farm practices. For all these reasons and also for the stimulation of consumption of certain agricultural products whose consumption had declined on account of high prices, subsidies may be given to bring about a reduction in price. The effect of subsidies is to increase the profit margin and also the real incomes of the peasants. Subsidies may bring about necessary readjustments in production, and are paid

on the cultivation of selective crops or on the production of all. There may be *discriminatory* or *general* subsidies. But their effects have to be pre-estimated, for the subsidies may increase output of one product at the expense of another. They may be limited to the produce or the profits of the peasant, so that his income increases substantially. The chief advantage of a subsidy is that it burdens the general taxpayer, and in this manner, the shift of income is from the non-agricultural sector to the agricultural and rural sector.

The Co-operative Movement. This section examines the forms the objectives and the methods of the co-operative movement, for sometimes it may achieve more than all the state activities combined. In the *first* instance the scope and the objectives of the co-operative movement are analysed followed by a descriptive survey of the types of co-operatives in the agricultural sector. And *next* are dealt, at some length, organisations and functions and principles of the co-operatives. The section closes with a review of the pitfalls and the dangers attendant upon the movement. Co-operation is connected with unselfish efforts of the peasants to the realisation of agreed ends in view, in this case those of improvement and betterment of the agricultural system. In the broader sense, the co-operative aims at the elimination of the middleman, in whatever capacity he may work, and to induce joint action among peasants for the successful termination of their operations in whatever direction they may be. Joint action under the banner of co-operation must be organised for the benefit of all members.

Scope and Objectives. It is on the realisation of the aims and objectives that the successful operation of the movement depends. Common well-being is the objective in all co-operatives, organised joint action for mutual benefit. Peasants organise for the purpose of performing more efficiently, or more economically, the functions for which they have to pay. There is better need for co-operatives when agriculture is afflicted by the presence of too many intermediaries, and also by heavy charges on the peasant. In the event of farming, being uneconomic, co-operatives are advised for poor peasants. Their scope is rather wide and they embrace all types of economic and agricultural activities too. Co-operatives remedy the wastes of agriculture, and put agriculture on a sound financial and economic basis. The economic objective is that co-operatives work more economically for the well-being of the peasantry.

Types of Co-operatives. The field of the activity of the co-operatives extends over all types of agricultural activity :

e.g., co-operative farming, co-operative marketing and the credit facilities extended by co-operatives. It may be stated that the co-operatives also embrace non-credit organisations and activities: thrift societies, education societies, housing societies, reform societies (undertaking social reform and also advocating the same), grading and standardising societies, the transport societies on an identical basis, and village reconstruction organisations. It may be difficult to deal in detail with various societies here. Mainly there are two types of societies, the *single-purpose societies*, and the *multi-purpose societies*, undertaking ambitious programmes.

Organisation and Functions What are the functions of co-operatives? And what is their organisation? Functions must be definite, these depend upon the organisation of the movement, as also its aims. A single-purpose society has functions different from those of the multi-purpose one. The single-purpose society would pursue objectives necessary for the fulfilment of its special aims, while the multi-purpose society would engage in many types of activities. Co-operatives may obtain loans from members (credit co-operation) or also provide at cheap prices, the daily necessities of life, such as food, or even manures and seeds, or they may buy for the use of the members, the implements of agriculture, or they may also place the peasant in direct communication with the customer, or sell his goods for him, or assist in the setting up of a processing factory, or provide for free chemical analysis of the soils, foods or manure, or make temporary loans to the peasants, or provide housing facilities to its members, or give superannuation allowances for the members or the servants of the society, or do any other odd job that the members decide should be done on a co-operative basis. There is a primary society with some few members, who pool their resources. They may have a president, a secretary, and a treasurer. There may also be federated co-operatives, to combine together the member-associations for mutual benefits. Also there may be the regional associations, or state associations for advising and guiding the units. But the most important remain the local associations, and the superstructure is less significant.

Successful Co-operations What are the essentials of successful co-operation? What are the principles to be followed in order that co-operation may be successful? Answers could not be categorical, except by making some generalisations. Certain principles could be laid down for guidance. As pointed out above, the organisation must perform some definite and

tion. The success of the co-operative depends on attention and interest. It is argued that multi-purpose societies could not succeed for the attention of the members is diverted to many directions with the result that they may not be able to perform their functions well. But this depends upon the outlook of the members, which is an important factor. Good management is also an essential factor, responsible for the success of the organisation. This means a thorough check on accounts which must be audited. The organisation must be developed both from the business and the social points of view, if the social side is not developed, the co-operators may not be enthused to the same extent. And then it must be the members, who should control the organisation, to the exclusion of all external and unnecessary interference. The organisation should be so organised as to be self-perpetuating; the best men in it should be available for the best jobs they could perform. The financial risks of the ventures on which the co-operative society embarks should be well distributed and well balanced, too.

Pitfalls and Dangers. Attention may now be focussed on the dangers and the pitfalls from which the movement suffers. The most important pitfall into which the movement is likely to fall, is mutual bickerings among members; there may be the mutual jealousies and also petty disputes; which may mount into big rifts and strikes at the roots of the organisations. Then the organisations may also suffer from the financial depletion and losses, for being founded on mutual accommodation, the society may be unable to resist the financial demands of the members, with the result that it may accumulate bad debts. And when weak audit may be another pitfall for the co-operatives to avoid, this could only be done by the state assuming audit functions. Another danger is the elaborate and expensive organisations that may be built up for the co-operatives. Co-operatives are weakened by the lack of understanding and accommodation among members, and also inadequate training on the part of the officials. Special training for co-operators is required for the success of the organisations. Another equally great danger is for the co-operatives to fix their targets too high, with the result that when the same are not fulfilled, the organisation may suffer from consequent desperation and remorse among the members. Lack of social cohesion among members is also dangerous.

Planning for Agriculture. This section deals with the elements of planning as applied to agriculture. In the agricultural arena more than in any other sector, the need for planning is

paramount. Planning is the order of the day and has found favour among a large number of statesmen. Priorities and targets of planning may differ from one country to another. Thus planning assumes different complexions in different set-ups. The one common target of all planning is to raise living standards of people for whom it is meant. Agricultural planning, too, must have the same target, of raising the living standards of the peasants. That is why planning is advocated.

Need for Planning Why plan? This question is not difficult, the answer to it lies in two stages, the first stage being the need for *planning for the economy* and second, the need for *planning for agriculture*. It is not possible to answer the second question without answering the first. The need for planning arises out of need for the co-ordination of the economic structure of the country. It is only by co-ordination, that the target of increased productivity is realised. Hence, the need for planning for general economic welfare. Similar is the end in view for the planner as far as agriculture is concerned. But in agriculture, the need is more intensified, for the simple reason that agricultural production is run on strictly individualistic-family basis, with the result that the need for co-ordinating the different and unrelated rural producers to the common good is urgent. And planning is also advocated for raising peasant's standard of living which is notoriously low, and often sub-human. Another objective is the correct utilisation of limited land resources of the country, the farmer, pursuing his own narrow ends, could hardly achieve this and. Still another point is the necessity of the elimination of waste, which in the agricultural sector is rather pronounced. The basis of the economy is laid in the agricultural production hence by revitalising it the economy, as a whole, would be toned up and the progress also attained.

The Difficulties But planning for agriculture is not an easy job, for it is beset with several difficulties. Any planning to be successful, must work through some sort of control of the activities of the producers, but the unit of production being very small and also dispersed (in agriculture), there is the difficulty of controlling the actions of diversified and small producers. Even if it be possible to control the activities direct of a majority of peasants, it is difficult to direct nature rainfall, or climatic trends. Then the ignorance of the peasants is another factor to be reckoned with, and it is an uphill task to convince peasants of the need to fall in line with planners. And the sectional and the narrow interests of the peasants also stand in the way of their co-operation with planners.

And then his prejudices handicap the planner. Lastly, it must also be conceded that the peasant has an outlook that does not visualise things beyond his own locality.

Forms of Planning. In the totalitarian form of agricultural planning, the peasantry is reduced to mere cogs in the planning machinery. This may not enthuse the peasant, although it may be quite fruitful in the short run, but in the long run this sort of coercion is not tasteful to him. Another form is based on the regimentation of total economic forces; with the result that the interests of the farmer are subordinated to those of the other sector of the economy. This form of planning, considered necessary from the point of view of general interests (?), may not be approved of by peasants, whose range of interests is narrow (they are unable to view the whole economy), and therefore, not successful in the long run. The third form of planning is imposed from above, and arbitrary though the agricultural sector is on a basis of equality and parity with industry. The success, it attains, depends on the smooth running and the efficiency of the administrative planning machinery, and may not be so successful being too bureaucratic. Still another form of planning is that which is from the bottom upwards, and leaves ample scope for the peasant to satisfy his own local ends; in it the participation of the peasant is ensured. It is more or less certain this form of planning is successful ultimately.

Integration & Co-ordination. The essence of all planning lies in its ability to mobilize the economy, in a manner, which is well integrated and correctly co-ordinated, too. Co-ordination and integration are the foundations on which successful planning is built up. This is to be completely and correctly appreciated. Integration has been looked at from point of view of different sectors of the economy, and also within agriculture itself. It is in this light, that the planners and the administrators should attempt to co-ordinate and integrate the whole system of the general economy, and give agriculture its due place. Integration of the agricultural system is to be from agriculture as within itself and also it is in respect of the planning framework. Co-ordination with the other sectors of the economy is also necessary. Two types of integration may be advised: the vertical and the horizontal: the former being the integration of different stages of the productive process, and the latter relating to its similar stages. There must be the co-ordination of the productive efforts of the producers in the different stages of production, and also the co-ordination of the producers in the different sectors of production, so that

their combined efforts may enable the economy to reach the targets in planning and production

The Planning Authority In this regard much would also depend on the planning authority, which could have a definite point of view and definite policy to implement. If it is the central planning authority, national interests would supervene over the local ones, while if the national authority is a composite one, all the different interests may be well balanced. Similarly, the economic interests of the agriculturists find an important place in national economic plans. But no single authority could be so constituted as to show awareness about local rural interests, which should also find a place in the economic planning. It is advisable, therefore, that the national planning authority be supplemented and assisted by the local planning boards to see to local interests, so that the same may be well served. It is by this method alone that the local, rural and agricultural interests could be safeguarded.

Rural Attitudes It is the attitudes of the rural and the agricultural populace that are responsible for the success or failure of plans. Those of helpfulness and understanding would go a long way to ensuring their success. But, if the rural attitudes are imbued with suspicion, the plan is only implemented at the official level, and not at the popular level, its success is partial. This is why rural planning should be in consultation with the rural people. The importance of rural attitudes is often underestimated, with the result that the enthusiasm of the rural people is not roused. Another point is that the basic attitudes of the rural people towards the general economic progress are important for the success of the plans. Those of backwardness and lack of initiative make planning (also a form of progressive activity) a partial success. Rural attitudes count for much.

Peasants' Participation Great stress is laid on public participation, in planning activities, as initiated by the state. The same could be said of the peasants' participation in the rural planning. For without this the fate of planning may not succeed. After all, the plans are for the progress and the elevation of popular living standards, but if the people do not desire to raise them, the scope of plan would be limited and its fulfilment remains only partial. It is to be appreciated, therefore, that without the participation of the peasant, the initial handicap in agricultural planning persists. The multiplicity of the production units and the non co-operation of the peasants in the planning machinery account for the planner's failure.

The Future. The future of the peasants is determined by the way in which national income is distributed as between the agricultural and the non-agricultural sectors of the society. It is also the price-ratio, as between their goods and the goods that the industrial and the other non-agricultural sections of the society produce, that is a determinant of their incomes (real, not nominal) of the peasants. The problem today is different from what it was in the days when agricultural pursuits were carried on for subsistence. A different problem poses itself before the peasant whose future is tied with that of the future of the his society and in this respect, it is to be conceded that the aim is to secure a good share out of the national income.

The Problems. What are the problems affecting the future of the peasant? The answer depends on local and topical and complications. Still, some general issues could be posed in this respect. The first problem is that of the maldistribution of incomes. Usually, the city and the urban labour could earn much more than the rural worker for the same amount of work; this baffles the peasant and the planner. Maldistribution of wealth is not only detrimental to the peasantry, but also national progress, as it weakens their enthusiasm and incentives in the work they take up. It is a problem of high priority. The second problem is that of the unfavourable price ratios, which reduce the real incomes of the peasantry. It may be due to the excessive pressure of population on land and the imbalance in production. The next problem is that of the natural trend (due to the inexorable operation of the law of increasing costs) towards a rise in the prices of farm products; this fact puts the peasants at a disadvantage which takes the form of adverse price ratios. And the last problem is that of lowering standards of living of the peasantry; this is further aggravated by the fluctuations that the peasantry and farming experience so commonly. The last two problems deserve consideration.

Inequalities and Prices. The question of prices giving birth to inequalities as between the peasants and the industrialists, is of great significance to the national economy and needs detailed consideration; i.e. price ratios as between the industrial and the farming goods and also fluctuating prices and their impact on the agricultural economy. Price ratios determine real incomes of the peasantry, while price instabilities jeopardize living standards. The first factor is of considerable importance, for if price ratios persist in being adverse to the peasants' interests, they would ultimately affect the quality of the farming enterprise and of the entrepreneur, thus depleting

agriculture both of resources and of entrepreneurs. The remedy is to evenly distribute the working population and the working capital as between agriculture and industry. The rising trend could only be controlled by measures designed to combat the law of diminishing returns (or increasing costs), that is the initiation of the scientific means of production and the better technique in agricultural undertakings. The problem is, therefore, that of putting agriculture on sound scientific footing. Again, fluctuating prices mean fluctuating incomes for peasants and this in turn means that the standard of living could not be stabilised. Living standards continue to drift from the higher planes to the lower ones with the result that the peasant reaches a level below which he could not sink. Such remedies have to be applied as the situation warrants.

The Standards of Living A low standard of living poses the most serious problem in the agricultural setting. How to raise the standard of living of the peasantry? Low standards in non-agricultural sector adversely affect the future of the agricultural enterprises as this fact seals all enterprising spirit and brings about a depletion of investments in the agrarian sector, with consequential disinvestment therein. But standards of living could only be raised after incomes have been lowered. Alternatively, this could be done by eliminating waste and converting it into some useful purpose. By teaching Home Economics to women folk in villages, the standards of living of the peasantry could rise, for condemned articles are converted into commodities, of utility to the peasant and his household. The various devices which may be adopted to bring about an increase in the incomes of the peasant have been discussed in the body of this book and in several chapters above.

Country and City Disparity, as between the city and the country living, is apparently responsible for damping initiative in peasants' enterprises. It is not income disparity or differences in the monetary earnings alone, that account for differential attractiveness of urban life, but the other *real* factors, that have to be taken into account, in his liking for the city life and his desire to settle there. It is in these intangible factors that lies an explanation for this disparity. Provision of schooling, hospitalisation, electricity, and other amenities of life characterise this disparity. Some progress in this direction has been made, no doubt, mobile dispensaries, mobile banks, and mobile post offices have done much to reduce the disparities as between the two. The din of city life makes an appeal to some people who prefer to migrate to the cities in search of ampler incomes and more economic opportunities there. As between the living

standards in the cities and the rural areas, the preference may be for the former types with the result that this disparity arises out of differential standards, as between these places. In this direction, a comparative study of living conditions and the standards of living is very urgently needed; it is essential for comparison of the two regions, with special reference to the costs of living as between them.

Population Movements. Two types of population movements are visible; absolute population trends in villages, and the movements of population as between villages and towns. Both these movements are important from the peasant's view-point. Survival rates and marriage rates are high in rural areas where family life is essential to the efficiency of the (rural) productive apparatus. With an improvement of village living standards, the trend of population is on the incline, for the first impact of prosperity is to raise population in regions which have risen from the starvation level to the subsistence level and upwards. Secondly, the urbanward movement is on the increase, and there is thus brought about an adjustment as between the pressures of population in the rural and the urban areas. The urbanward movement comprises the active members and the richer sections of the village population and this brings about a depletion of the working population in rural areas, as also a diminution of the investible funds there. Qualitatively speaking, this adversely affects the village economy. Industries attract more people from villages to towns, while the ruination of village industries has been responsible for urbanward migration.

The Question Mark. On what does the future of the peasant depend? The most pressing problem is that of the raising the peasant's living levels. It was thought that the peasant could benefit from competition, which should, therefore, be encouraged. But this view has been now discarded, and the modern view stresses the evils of competition as being responsible for the present plight of the peasant, and lowering living standards. His income depends on prices obtained for his produce, price is the main consideration to be reckoned with. Competition has to give way to co-operation, which is the best remedy for the ills of the rural people. What form should this co-operation take, is not to be decided by the theoretician but by an assessment of the needs of the villages and the rural people themselves, as co-operation must be in accord with the environment; it should be evolutionary in its growth and not an imposition from above.

Lines of Action. In order that national and rural welfare,

accord with each other, it is desirable that the problem be not attacked in a hasty and isolated manner. In the agricultural interests, restrictions are enforced including those on agricultural industry itself. But this is not to jeopardise national standards of living and consumption. Competition may benefit a few industries and also a few undertakings, and its restriction must be very discriminate. For instance, in respect of middleman services, in the marketing sector, it would pay to encourage competition. The impact of limiting competition on prices has also to be borne in mind beforehand for it may result in the enhancement of price levels, the whole price cost structure may as well be disturbed by the action taken to limit competition in select sectors of the society. An eye on social and economic justice has to be kept, for now, as never before, the ideals of socio-economic justice have found favour with everybody and peasants are increasingly conscious of these. The flexibility of the industrial and the agricultural systems has to be taken into account when introducing reforms. Also the interrelations of the two must be viewed so as not to disturb one with consequential disturbance of the other. It is also to be noticed that justice in distribution is essential for the peasant's well being.

Concerted Action In this connection, it may be pertinent to point out that the future of the peasant could only be brightened by concerted action when implementing plans for the uplift of the peasant. Concerted action is in the first instance, essential in cultivation then in marketing and distribution and lastly, in the allied processing and other industries. In the second stage concerted action is also necessary in the industrial sector as the situation in the non-agricultural sector reflects on conditions in the agricultural sphere. And it is important that the same procedure be followed in other sectors, so that production from agriculture and industry is absorbed in the markets and all forms of economic activity are well integrated. In another way, it is proper and necessary that all agencies for the uplift of the peasant should work together, and be co-ordinated in a concentrated manner. It is also to be stressed that the prime need of all agricultural policies is the unity of purpose, for nothing confuses the peasants more than different voices with which welfare workers often speak. It is the unity of purpose in agricultural sector that needs to be impressed on the planners. The economic policies of the state should be evolved in consultation with several non-official agencies, with a view to achieving agreement on basic points so that the implementation is rendered easy for the peasant who may also enlist his active participation and assistance in the movements launched to lift him up to the standards deemed

necessary for him and the society he lives in. How this is being done is an interesting study which, though not pertinent to the theoretician, may still be fruitful.

The Extension Services. A fleeting reference may be made here to the extension services which have been launched in several countries for the express purpose of improving the peasants by means of self-reliance. The state can put him on the right path and show him how the greater utilisation of local resources could result in bringing greater prosperity. Various steps have been advised, but there is some agreement on the basic methods of approach. In the *first* instance, the problem could be tackled by improving agriculture itself, this would bring greater income to the peasant. In this connection, the practical aspects of agricultural science should be *extended* to the peasant with the result that he has a practical approach to agricultural problems. Training in the rural leadership is an essential feature of the programme. The next step aims at the improvement of the health of the peasants, for the expenses add to the costs in terms of efforts to put the farmers in healthful condition is huge so that a great saving is affected if the services and expert advice is directed to exploiting the local indigenous medicinal resources to lessen the strain on the purse of the peasants. In this respect, attention has to be focussed on the organisation of sanitation services in villages through effectual co-operation. The villagers must acquire hygienic habits. The next step is to improve home practices, so that the peasant and his wife better home and family life to which they are so much devoted. It is advisable to direct the attention of the villagers to those practices as could be conducive to better living. Without recreational activities rural life becomes a routine dull affair boring both to the villagers and their attitudes. Illiteracy and ignorance are the next problems to be attacked, the organisation of the farm schools, both for children and adults, but with care and caution, is the next step without which ruralites could not make their practices better. In this respect, it is very very important that rural schools should be made really rural, the instruction in these schools should be in conformity with the needs and the local problems, which may be included in the curricula. And the next step is to make the application of the latest in science possible in the locality in accord with the means and the needs of the peasants. And above all, the essential feature of this programme should be to operate a total programme; of course this is most important in the estimation of the experts, who have had some experience of rural assignments. No farmer could split up his life and its problems into isolated units, and then tackle them; life and its problems have to be

treated as a whole and not piecemeal. It is of importance that the problem is attacked from all fronts so that no weak spot infects the social fabric of the village society, nor any loopholes left.

An Epilogue This analysis points to the fact of dynamism in the rural economy, and its application to the agricultural sector, but it has to be conceded that the survey has been only selective, far within the limited space it could not be humanly possible to attempt an exhaustive and complete analysis of agricultural problems facing an unstable economy in its dynamic perspective. It may only be hoped that the selectivity of the survey has not much depreciated its utility. The future of village communities appears to be bright, in view of the growing consciousness of the farmer to his own problems and also in view of increasing awareness about agricultural problems by the general public. This last chapter attempted to review the basic factors making for the betterment of the agriculturists and for the reform of agriculture with a view to improving the status of the peasant and also his environments. To the peasant, agricultural pursuit is not only a source of money incomes, but a mode of living. For the farmer, agriculture is the whole of his life and an essential part of his living. Hence the crux of the rural problem is not economic, but social and sociological. It is human relations that count for more than anything else in the practical aspect of living in the rural society, and it should be the aim of the Economist, the Politician and the Legislator to conform to this ideal of welding social relations in a manner most invigorating to the peasants and also conducive to the general well being of the society as a whole. In this connection, two things appear to be extremely essential, first that is local rural leadership that should be evaluated and secondly, that haste should be made slowly. This leadership problem is quite a difficult issue because of the fact that the gulf between the rich and the poor in the rural areas, is sufficiently wide, and the educational standards not very high. External, non rural leadership could not inspire that confidence and self reliance that is of the essence of all reform and advancement in all walks of life. Those intimately in touch with rural conditions and agrarian attitudes, alone, could take effective steps in this direction. *And the nature of the efforts may also vary with different localities.* In the second instance, the advice is "make haste slowly" for any hasty step may jeopardise all attempts, and also cause disappointment, resulting in a major setback to all concerned. The peasant may creep back into his shell, and the efforts of the rural worker wasted. It is only by very slow, well-calculated steps, that the whole problem could

be attacked and tackled successfully. It is on sure foundations that success could be built and then stabilised. It is also to be recognised that the foregoing is only instrumental in making the laymen and the students understand and appreciate the problems confronting Agriculture. And if this objective of providing the rural worker with intimate theoretical apparatus to enable him to assess a particular situation correctly, is achieved, the author stands very amply rewarded for his efforts in presenting this dissertation.